PB-244 920

RADIUM-226, URANIUM, AND OTHER RADIOLOGICAL DATA COLLECTED FROM WATER QUALITY SURVEILLANCE STATIONS LOCATED IN THE COLORADO RIVER BASIN OF COLORADO, UTAH, NEW MEXICO, AND ARIZONA. JANUARY, 1961 THROUGH JUNE, 1972

Environmental Protection Agency
Denver, Colorado

July 1973

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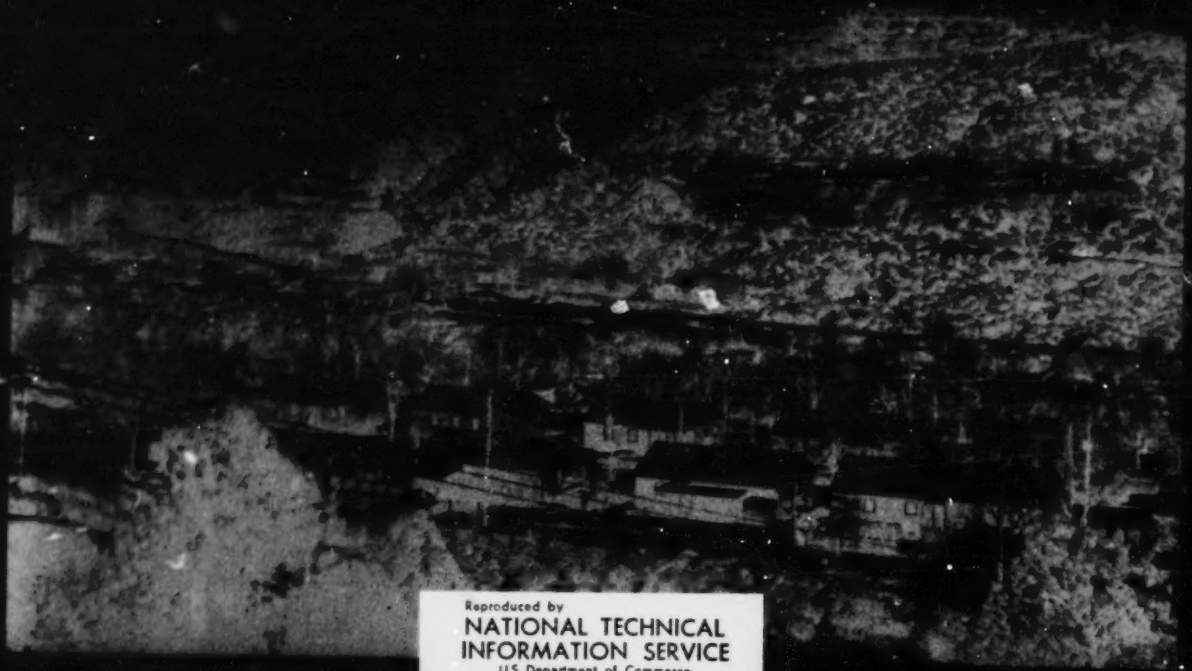

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ENVIRONMENTAL PROTECTION AGENCY
REGION VIII

JULY, 1973

BIBLIOGRAPHIC DATA SHEET	1. Report No.	2.	3. Recipient's Accession No.

4. Title and Subtitle: Radium 226, Uranium, & other radiological data from water quality surveillance stations located in the Colorado River Basin of Colorado, Utah, N Mexico & Arizona — Jan. 1961 Through June 1972

5. Report Date: July 1973

6.

7. Author(s)

8. Performing Organization Rept. No.

9. Performing Organization Name and Address
Environmental Protection Agency
1860 Lincoln St.
Denver, Colorado 80203

10. Project/Task/Work Unit No.

11. Contract/Grant No.

12. Sponsoring Organization Name and Address
Environmental Protection Agency
1860 Lincoln St.
Denver, Colorado

13. Type of Report & Period Covered

14.

15. Supplementary Notes

16. Abstracts: The report concentrates on total uranium & radium-226 data for surface waters & compares the mean "background" concentration with concentrations downstream of uranium mills & uranium tailings piles. Due in part to a decrease in uranium mills & in part to an improvement in the containment of uranium tailings piles, concentrations of radium 226 & uranium have generally decreased throughout the Basin.

Statistical analysis of radium-226 concentrations in the Dolores-San Miguel Rivers System clearly shows the water quality degradation caused by uranium extraction activities. This straightforward statistical analysis also serves a basis for evaluating the radium content of other river systems.

17. Key Words and Document Analysis. 17a. Descriptors
* Uranium
* Water Quality

17b. Identifiers/Open-Ended Terms
* Radium 226
* Colorado River Basin

17c. COSATI Field Group

PRICES SUBJECT TO CHANGE

18. Availability Statement	19. Security Class (This Report)	21. No. of Pages
Release Unlimited	UNCLASSIFIED	272
	20. Security Class (This Page) UNCLASSIFIED	22. Price 8.50-225

FORM NTIS-35 (REV. 10-73) ENDORSED BY ANSI AND UNESCO. THIS FORM MAY BE REPRODUCED USCOMM-DC 8265-P74

8SA/TIB-24

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A COMPREHENSIVE RELEASE OF DATA FROM THE RMN (RADIUM MONITORING NETWORK) SYSTEM

TECHNICAL INVESTIGATION BRANCH AND SURVEILLANCE BRANCH
SURVEILLANCE AND ANALYSIS DIVISION

U. S. ENVIRONMENTAL PROTECTION AGENCY
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1860 Lincoln Street
Denver, Colorado 80203

July, 1973

ABSTRACT

The RMN ("Radiological" or "Radium Monitoring Network") System was established in 1961 at the direction of the "Conference on the Matter of Interstate Pollution of the Colorado River and its Tributaries" and has continued to produce measurements of radium-226, total uranium, and other surface water parameters affected by the occurrence, extraction, and refining of uranium ore in the Colorado River Basin. This report presents all of the available data supplied by the RMN System to date. The report also examines certain of these data in terms of their long- and short-term trends. In excess of 3000 measurements of radium-226 and uranium in the dissolved state are presented as are many measurements of other radioactivity parameters.

The report concentrates on total uranium and radium-226 data for surface waters and compares the mean "background" concentration of 0.08 pci Ra226/l and 2.1 µg Utot/l with concentrations downstream of uranium mills and uranium tailings piles which have been as high as 26 pci Ra226/l and 260 µg Utot/l. Due in part to a decrease in the number of uranium mills and in part to an improvement in the caretaking of uranium tailings piles, concentrations of radium-226 and uranium total have generally decreased throughout the Basin with the notable exceptions being within the Dolores-San Miguel Rivers System.

Statistical analysis of radium-226 concentrations in the Dolores-San Miguel Rivers System clearly show the water quality degradation caused by uranium extraction activities. This straight forward statistical analysis also serves a basis for evaluating the radium content of other river systems.

The RMN sampling and analysis system has operated for about ten years and despite recent reductions in stations, sampling frequencies, and radioassay capability, continues to provide the essential element of water quality analyses-long-term measurements of ambient and "contaminated" conditions.

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INTRODUCTION

This is a summary transmittal of radiological data collected through June, 1972 from the Radium Monitoring Network ("RMN"). The Network is designed to collect radium-226 and uranium (total) data from selected surface waters of the Colorado River Basin, especially in the areas of uranium deposits and uranium extraction. The Network was instituted under the U.S. Public Health Service and was maintained by the Colorado River-Bonneville Basins Office of the Federal Water Quality Administration (also the Federal Water Pollution Control Administration) in the Department of the Interior. Responsibilities for the Network were assumed by the U.S. Environmental Protection Agency in December, 1970. The majority of the RMN (Colorado and Utah) is located within Region VIII of EPA (Colorado, Montana, North Dakota, South Dakota, Wyoming, and Utah) and this summary report has been prepared by the Region VIII office.

The purpose of this report is to both supplement and summarize radiological data presented in the sixteen previous releases [1] of RMN data issued between October, 1962 and January, 1970. Selected summaries of the data were also published in Radiological Health Data and Reports in November 1964, November 1965, May 1968, and December 1968.

This report is intended to provide interested parties with a convenient summary of previously reported water quality data and to bring the data releases up to date through June, 1972. The report further describes the current (July, 1973) RMN system though no data from the past year's sampling are provided. Since agency names and interests may have changed since the last data release, this report is also a convenient vehicle to introduce the Radium Monitoring Network to the unitiated.

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1. Radium Monitoring Network Data Release #1 - Oct 62; #2 - Jan 63; #3 - Jul 63; #4 - Jan 64; #5 - Jul 64; #6 - Jan 65; #7 - Jul 65; #8 - Jan 66; #9 - Jul 66; #10 - Jan 67; #11 - Jul 67; #12 - Jan 68; #13 - Jul 68; #14 - Jan 69; #15 - Jul 69; #16 - Jan 70

THE MONITORING NETWORK

The RMN system is variously termed the Radium Monitoring Network and the Radiological Monitoring Network. Since the system monitors more than radium, the latter terminology is now preferred. The RMN is a surface water quality surveillance system consisting currently (July, 1973) of fifteen sampling stations located throughout the Colorado River Basin. The RMN system was established in response to recommendations of the "Conference on the matter of Interstate Pollution of the Colorado River and its Tributaries" to measure radium-226 and other radioactive elements associated with uranium mill wastes, both liquid and solid. The conference was called under the provisions of the Federal Water Pollution Control Act as amended in 1956. The specific recommendations or assignments made regarding a radiological monitoring network were those listed in Table 1. This program for identifying the impact of uranium extraction on the Basin included the water quality stations herein described, sediment analysis, irrigated crop studies, tailings pile stabilization, evaluation of wind-blown tailings, and other factors. This report is limited to presenting the result of radioassay of surface water samples.

Investigations of radiological contaminants associated with uranium mills in the Colorado River Basin began in October of 1950 and proceeded through 1960 on a case-by-case basis. The results of these investigations called attention to the fact that aquatic biota collected from locations downstream of certain uranium mills contained radium in concentrations two orders of magnitude greater than that measured in samples collected upstream of the same mills. More specifically, radium-226 concentrations in algae downstream of Durango, Colorado and the tailings pile in Vancorum, Colorado were 660 and 560 picocuries [2] per gram (dry, ashed) respectively while upstream samples were 6 and 5 pci/gm. More intensive investigations near the uranium mill at Durango in 1958 and 1959 showed radioactive contaminants in downstream water supplies and in irrigated crops; contaminants which could be traced to the mill effluents. In excess of eighty percent of the increase was shown to be caused by the liquid discharge from the mill. However, a significant portion of the radium content of surface waters in the Colorado River Basin continues to be derived from tailings material (seepage through and erosion therefrom).

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2. picocurie = 10^{-12} curies.

TABLE 1

ASSIGNMENTS RELATING TO THE RADIOLOGICAL MONITORING NETWORK MADE AT THE VARIOUS SESSIONS OF THE CONFERENCE ON THE MATTER OF POLLUTION OF THE COLORADO RIVER AND ITS TRIBUTARIES

1st Session (13 Jan 60)

- "That such investigations and study should cover (g) pollution caused by radioactive wastes."

- "That such study should include the determination of specific pollutants and their concentration and include radioactive, ... studies..."

2nd Session (11 May 61)

- "1. Further general reduction in radioactive pollution..."

- "2. Specific reduction in radioactive contamination of [certain] waters..."

- "3. Continuing monitoring of the radioactive content of river sediments..."

- "5. Provisions for a safety factor to prevent accidental spills from uranium mills through the following steps:

  ...c. Development and initiation of an adequate alerting system to provide immediate notice to State and Federal agencies of accidental spills."

- Report on ... "3. Extent of hazards from radioactive contamination of crops in the upper basin attributable to radioactive contamination of irrigation waters,..."

- Report on ... "4. Extent of hazards from radioactive contamination of the dry washes at Maybell, Colorado, and Mexican Hat, Utah, and of South Creek, near Monticello, Utah,..."

- Report on ... "6. Proposed methods for evaluating long-range effects of radioactive content of basin deposits."

- Report on ... "13. Operational status of radioactivity water monitoring network."

3rd Session (9-10 May 62)

- "4. Conduct limited investigations into radium uptake by stream biota including fish."

- "7. Conduct limited sampling of uranium mill effluents and and environmental media to ascertain levels of lead-210 in view of its possible importance as a water contaminant..."

- "3. Complete development of an alerting system for accidental spills from uranium mills..."

TABLE 1 (Cont.)

- "4. Investigate the Monticello, Utah area/or hazards from radioactive contamination."

- "5. Investigate further the radiological and toxic chemical conditions of waters at Uravan, Colorado."

- "6. Complete the radium monitoring network and continue radium monitoring."

- "7. Continue on a limited basis monitoring of radiological content of sediments."

4th Session (27-28 May 63)

"B. Continuation of the Radium Monitoring Network for dection of accidental spills and evaluation of average radioactivity levels throughout the Basin... [including] (1) Extension of the analyses... to include other significant radioisotopes associated with uranium, lead-210, and thorium. (2) Evaluation of radioactive fallout in Basin waters by analysis [for] Strontium-90, gross beta activity, and a gamma scan..." ..."(2)(C) Sediment monitoring for gross alpha activity and radium-226 at a reduced number of sampling points", (2)(D) Studies of residual radium-226 contamination at selected farms...", (2)(F) Sampling of all uranium mill effluents for lead-210 and thorium..."

5th Session (26 May 64)

"7. The Project will study and evaluate the effects of uranium on fish."

6th Session (26 Jul 67)

"7. The surveillance activities performed by State and Federal agencies shall be continued for the purpose of providing a continuing evaluation of the adequacy of control measures in terms of the short-range and long-range environmental radioactivity levels."

7th Session (15-17 Feb 72)

No recommendations addressing radiological considerations.

Two objectives for the RMN system can be derived from the Conference assignments and the work leading up to the Network. First the Network is to quantify the fate of uranium mill wastes in the streams of the Colorado River Basin and second, to provide a warning system for spills of potentially toxic materials. To be able to achieve these objectives, the Network must distinguish between "background" or natural concentrations and man-caused concentration and the system must provide fast analyses. The long period of record available for some stations provides for the identification of background levels so long as a significant rise in concentration is affected by artificial discharges. The ability to warn of spills has never been fully realized and must be considered inoperative at present due to a lack of radioassay capability.

The first RMN station was established in January, 1961 (RMN-12; Animas River downstream of Durango, Colorado). The Network grew to twenty-seven in the early sixties and has now declined to fifteen stations, twelve of which are sampled by the U.S. Geological Survey for the Region VIII offices of the Environmental Protection Agency. The decline in number of sampling locations has followed the decline in active uranium mills. Eighteen major mill sites (Table 2) have been identified in the Colorado River drainage -- only four of these sites have what can be considered "active" mills at this time (Rifle, Colorado; Uravan, Colorado; Moab, Utah; and LaSal, Utah). However, some upswing in uranium extraction activity is expected [3]. An overview of sampling locations and mills, indicating whether or not they are operating, is given in Figures 1A and 1B. Figure 1, which may be found in the rear pocket, locates the sampling sites and mills more accurately.

Sample collection frequencies have ranged from hourly to quarterly (4 times per year). Hourly samples are collected at two sites (RMN 18 and 20, upstream and downstream of Uravan, Colorado) when the automatic samplers are operating. The remaining thirteen stations have grab samples collected at frequencies varying from once per week, once per month, and once every three months. Sampling frequencies for each site are presented along with the data tables in the Appendix. The samples receive no treatment in the field prior to radioassay.

Radioactivity in uranium milling wastes results from its presence in raw uranium ore. Uranium-bearing ores normally have a uranium content of from 0.1 to 2.0 percent of U_3O_8 (uranium oxide) and generally

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3. "Leasing of AEC Controlled Uranium Bearing Lands -- Colorado, Utah, New Mexico", Draft Environmental Statement, USAEC, March, 1972, WASH-1523.

TABLE 2

COLORADO RIVER BASIN URANIUM MILLS AND RMN STATIONS

Mill Location	Period of Operation Began	Ended
Rifle, Colorado (old mill)	1947	1958
Rifle, Colorado (new mill)	1958	Operating c
Uravan, colorado	1949	Operating
Naturita, Colorado a	1947	1958
Slick Rock, Colorado b	1958	1962
"Government Pile" at Slick Rock	unknown	(abandoned)
Maybell, Colorado	1957	1964
Gunnison, Colorado	1958	1962
Durango, Colorado	1949	1963
Grand Junction, Colorado	1951	1970
Moab, Utah	1956	Operating
Mexican Hat, Utah	1957	1965
Monticello, Utah	1949	1959
Hite, Utah b	1949	1953
Green River, Utah b	1958	1961
Monument Valley, Arizona	1955	1966
Shiprock, New Mexico	1954	1966
Tuba City, Arizona	1956	1965
Rio Algom (LaSal, Utah) b	1972	Operating

a. Operated as a concentrator from 1961 to 1963
b. Concentrator mill
c. Currently (1973) in "mothballs"

TABLE 2 (Continued)

RMN STATIONS AND PERIOD OF RECORD

Number (RMN-)	Station Location	Period of Record
1	Colorado River at Silt, Colorado	11/25/61 - Present
4	Colorado River at DeBeque, Colorado	11/12/61 - Present
5	Gunnison River at Grand Junction, Colorado	04/16/62 - 05/19/72
6	Colorado River near Fruita, Colorado	04/16/62 - Present
9	Colorado River north of Moab, Utah	12/11/61 - Present
10	Colorado River south of Moab, Utah	12/11/61 - Present
11	Animas River at Durango, Colorado	07/17/61 - Present
12	Animas River near Cedar Hill, New Mexico (Colorado)	01/19/61 - 08/17/71
13	San Juan River upstream of Farmington, New Mexico	07/09/62 - 04/27/64
14	San Juan River near Fruitland, New Mexico	08/01/62 - 09/03/69
14S	San Juan River downstream of Shiprock, New Mexico	07/09/62 - 07/19/71 *
15	San Juan River upstream of Mexican Hat, Utah	12/11/61 - Present
16	San Juan River downstream of Mexican Hat, Utah	12/11/61 - 10/21/70
17	San Miguel River at Naturita, Colorado	10/28/61 - Present
18	San Miguel River at Uravan, Colorado	10/27/61 - Present
20	San Miguel River downstream of Uravan, Colorado	10/27/61 - Present
21	Dolores River near Bedrock, Colorado	10/30/61 - Present
22	Tomichi Creek near Gunnison, Colorado	11/12/61 - 06/30/62

* Sampling resumed recently by New Mexico and EPA Region VI.

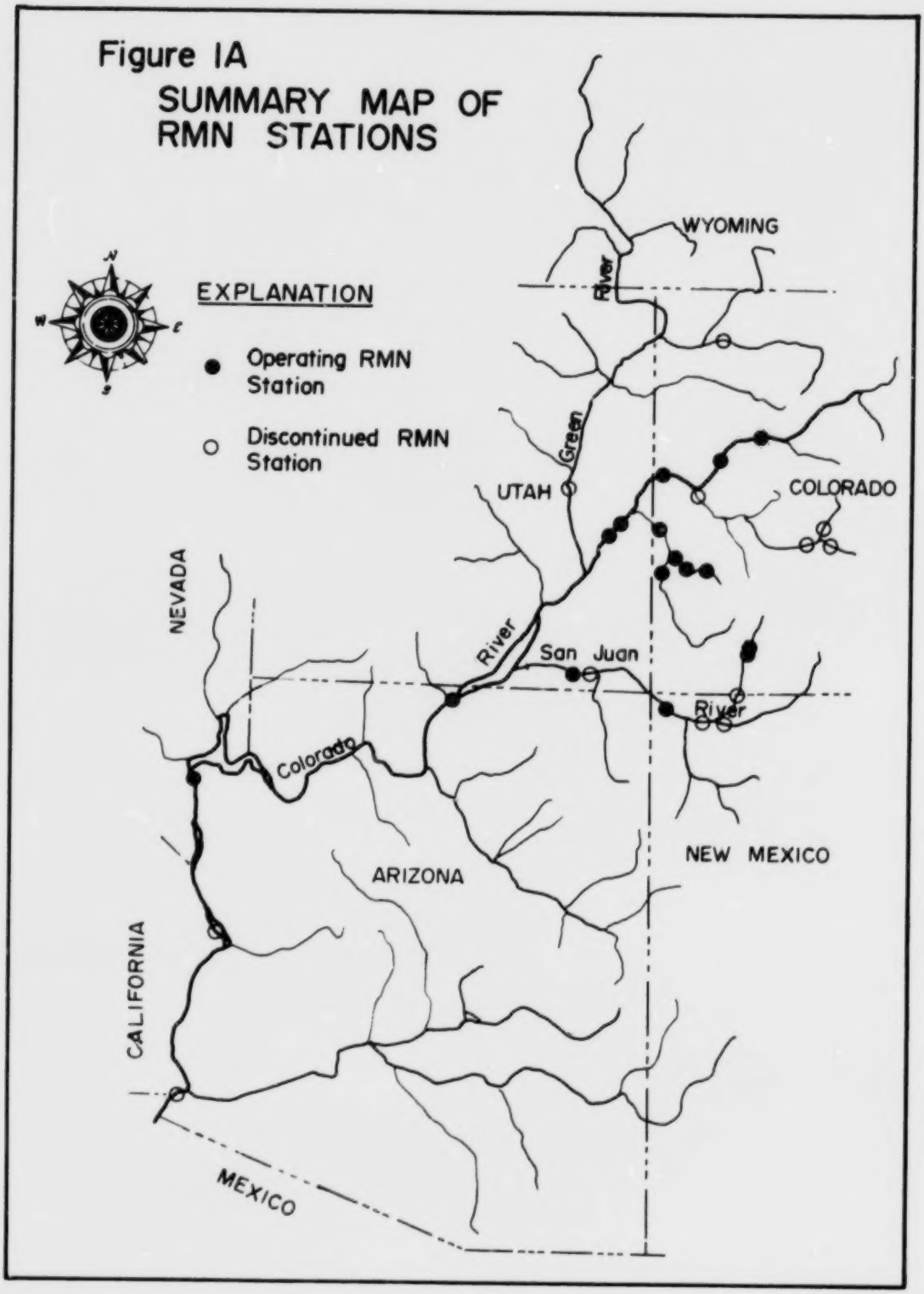
TABLE 2 (Continued)

Number (RMN-)	Station Location	Period of Record
24	Gunnison River upstream of Gunnison, Colorado	12/11/61 - 06/30/65
25	Gunnison River downstream of Gunnison, Colorado	12/11/61 - 06/30/65
26	Dolores River near Gateway, Colorado	10/30/61 - Present
28	Yampa River downstream of Maybell, Colorado	07/02/62 - 05/16/72
29	Green River downstream of Green River, Utah	07/16/62 - 10/28/64
30	Colorado River at Northerly US-Mexico Boundary, Arizona	07/30/62 - 07/04/72
31	Colorado River at Page, Arizona (Lake Powell)	05/06/63 - Present **
32	Colorado River near Boulder City, Nevada (Lake Mead)	03/11/63 - Present **
33	Colorado River at Metropolitan Water District Intake near Parker Dam, California (Lake Havasu)	01/07/63 - 10/01/68

** Presently sampled by EPA Region IX.

Figure IA

SUMMARY MAP OF RMN STATIONS



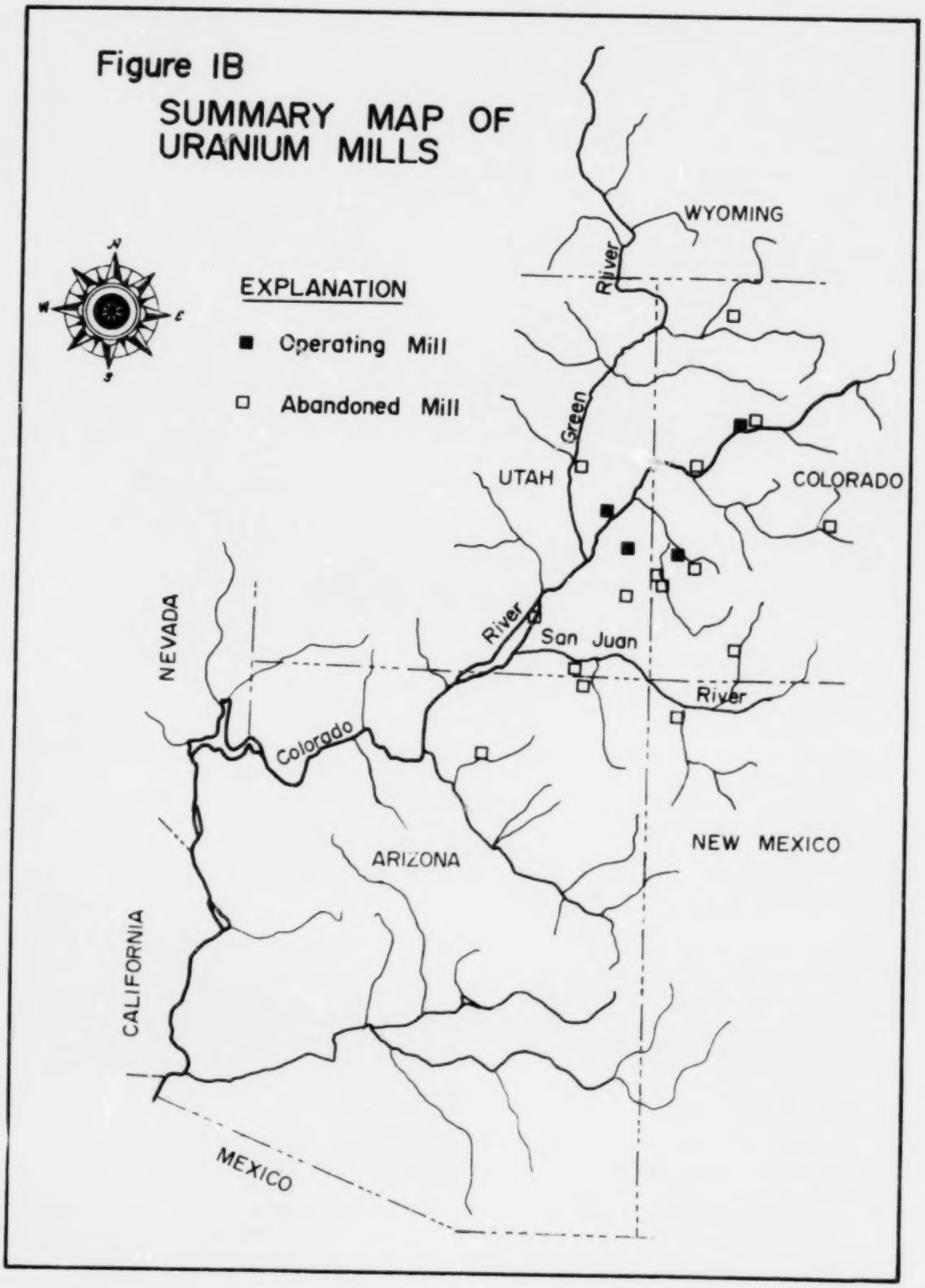


Figure 1B
SUMMARY MAP OF URANIUM MILLS
EXPLANATION
Operating Mill
Abandoned Mill
WYOMING
River
Green
UTAH
COLORADO
NEVADA
River
San Juan
River
Colorado
NEW MEXICO
ARIZONA
CALIFORNIA
MEXICO

average about 0.25 percent. The uranium is present as uranium-238, uranium-235, and uranium-234. About 99 percent (by weight) of the natural uranium is U-238. Hence, in addition to uranium, the decay products of U-238 are of primary concern in uranium milling wastes. The radioactive decay products of U-238 are shown in Table 3. It is estimated that about 85 percent of the total radioactivity entering a mill as raw uranium ore becomes waste (assumes uranium in secular equilibrium with its 13 daughter products). Thus about 1950×10^6 picocuries of combined alpha and beta activity are released per pound of uranium recovered [4]. The bulk of this waste radioactivity (97 to 99 percent) goes to tailings piles as suspended solids.

Uranium is hazardous in large quantities by virtue of its chemical toxicity rather than its radioactivity. At times, as much as 99 percent of the uranium is recovered and only one percent goes to waste. Radium has the lowest Maximum Permissible Concentration in water (MPC_W) and generally travels through the milling process quite freely, with as much as 98 percent going to the tailings as suspended solids and two percent being dissolved in the aqueous effluents. However, the fate depends upon the leaching process used.

Of the two thorium isotopes in the U-238 chain, thorium-230 is of most concern by virtue of its alpha emission and its long half life. Under alkaline conditions, dissolved thorium should precipitate such that in alkaline uranium leach processes the thorium should go with the solid tailings and in acid leach processes the thorium may remain dissolved in the milling process and then precipitate upon entering surface waters (since surface waters of the Colorado River Basin are generally alkaline).[5]

Strontium-90 measurements are utilized to evaluate the contribution of atmospheric fallout to the surface waters. Strontium-90 is not produced in the natural uranium decay chain. However, strontium-90 is ranked high as a hazard to human health. Strontium-90 and radium-226 are considered additive. Of course there are other products of certain nuclear reactions that enter the atmosphere and pose a possible hazard to health.

The RMN system continues to provide an unusually valuable measurement of natural radium-226 and uranium concentrations (dissolved) since sufficient samples are being collected to provide statistically valid data. Unfortunately, it is rare when unusual and, perhaps, benign elements or compounds are measured over long periods of time

---

4. 1 pound of uranium has an activity of about 150 μci and there are 13 radioactive daughter products, which, if they are in secular equilibrium have the same activity. Thus, if uranium is removed, 13 x 150 uci = 1950 μci or 1950×10^6 pci are released. This assumes that radon-222 (gas) remains with the ore until the ore is crushed.
5. National Lead Co., 1960, "An AEC Research and Development Report From Winchester Laboratory." Topical Report WIN 112, Winchester, Mass. (Feb 60)

TABLE 3

URANIUM-RADIUM FAMILY, MPC_w VALUES [a]

Nuclide	MPC_w [a] pci/liter	Critical Organ	Half-life	Emission
Ra^{226} [b]	3.3	Bone	1,602 yr	Alpha
Pb^{210}	33	Kidney	20.4 yr	Beta
Po^{210}	233	Spleen	138.4 days	Alpha
Th^{230}	667	Bone	8×10^4 yr	Alpha
Th^{234}	6,667	GI Tract	24.1 days	Beta
U^{234}	10,000	GI Tract	2.47×10^5 yr	Alpha
U^{238}	13,300	GI Tract	4.51×10^9 yr	Alpha
Bi^{210}	13,300	GI Tract	5 days	Beta
Pa^{234}	c	--	1.1 min	Beta
Po^{218}	c	--	3.05 min	Alpha
Po^{214}	c	--	1.64×10^{-4} sec	Alpha
Bi^{214}	c	--	19.7 min	Beta
Pb^{214}	c	--	26.8 min	Beta
Rn^{222}	N/A (gas)	Lung (daughter-products)	3.82 min	Alpha
U^{nat} [d]	6,667	GI Tract	4.51×10^9 yr	Alpha
Th^{nat} [e]	333	Bone	1.41×10^{10} yr	Alpha

a. MPC_w value is the Maximum Permissible Concentration in water for an average member of the general population (1/30th HB 69 value for continuous occupational exposure), NCRP, 1959.

b. The U.S. Public Health Service (1962) recommended that water supplies be subject to "approval" if Ra^{226} concentrations exceed 3 pci/l. The Federal Radiation Council has further stated that the daily consumption of 2 liters (in liquids and "solid" foods) of water containing 10 pci Ra^{226}/l would produce a dose equal to the recommended upper limit dose for the general population.

c. No value given for these short-lived materials.

d. Since the specific activity of Unat (U^{238} + U^{234} + U^{235}; 99% U^{238} by weight) is 3.34×10^{-7} curies per gram, the MPC_w may also be expressed as 2×10^4 ug/l.

e. Comprised of Th^{232} and Th^{228}.

Note: The MPC_w for Sr-90 from HB69 is 33pci/l. The Public Health Service has recommended that water supplies be subject to "approval" if Sr-90 concentrations exceed 10pci/l. The Federal Radiation Council has further stated that the daily consumption of 2 liters (in liquids and "solid" foods) of water containing 100pci Sr^{90}/l would produce a dose equal to 1/3 of the recommended upper limit dose for the general population.

such that the true aspects of discharges can be calculated. More frequently, we do not measure the parameters of water quality until we are in the midst of anomalous concentrations that are causing water quality problems. We believe that the value of such a long-term sampling network will be shown in the subsequent sections on "Results of Radioassay at Long-term Stations" and "Detailed Analysis of Radium-226 Concentrations and Mean Monthly Flows". Time-dependent and statistical analysis of these data provide unique information concerning the background concentrations and the impact of man-caused alterations in the content of uranium decay chain isotopes in the waters of the Colorado River Basin.

Reductions in the Network over the last two years have severly impaired the usefulness of the Network as far as the spill-detection and monitoring of abandon piles functions. If the AEC-leasing program should occur, it is probable that the Network will have to be reestablished. It is currently Region VIII's objective to expand the Network into Wyoming to provide adequate surveillance of the Shirley Basin Area, the Gas Hills area, and areas near Douglas and Buffalo, Wyoming.

METHODS OF RADIOCHEMICAL ANALYSIS FOR RADIUM AND URANIUM

1. Radium-226

All current assays for radium-226 and most of the previous assays follow the method outlined in Standard Methods for the Examination of Water and Wastewater, (American Public Health Association, 1015 18th Street, N.W., Washington, D. C. 20036). The method consists of percipitation of radium and subsequent measurement of the alpha activity of daughter products, primarily radon-222. At levels in excess of 1 picocurie /l (pc/l) the error at the 95 percent confidence level is on the order of ± 5 percent. At levels less than 0.25 pc/l, the equivalent error is on the order of ± 10 percent.

2. Uranium

A modified fluorophotometric method has been used for uranium determinations. Chemical separation is used to remove interfering elements such as iron. The method measures the presence of all isotopes of uranium. The resulting concentration is expressed in terms of "Uranium-natural" or "total uranium".

RESULTS OF RADIOASSAY AT LONG TERM NETWORK STATIONS

This section presents a summary, in terms of yearly averages, for some 3,451 measurements of radium-226 and 3,126 measurements of total or natural uranium. The section describes the average concentrations in terms of their geographical relationship to uranium-extraction activities. As noted previously, Figure 1 (in the rear pocket) graphically portrays the RMN sampling stations and uranium mill sites.

Table 4 lists radium-226 data for the twenty-seven Network Stations. Mean annual averages have ranged from 0.02 pci/l at RMN 22 (Tomichi Creek upstream of the "Gunnison Pile") to 3.33 pci/l at RMN 20 (San Miguel River downstream of the Uravan Mill). Table 5 lists total uranium concentrations. (Mean annual averages of uranium have ranged from 0.80 μgm/l to 33.52 μgm/l).

Background Concentrations of Radium and Uranium

Six of the RMN stations may be considered as collecting surface water with background concentrations of uranium and uranium decay products. These stations represent the Colorado River (RMN 1), the Animas River (RMN 11), the San Juan River (RMN 13), the San Miguel River (RMN 17), Tomichi Creek in the Gunnison drainage (RMN 22) and the Gunnison River (RMN 24). The mean dissolved radium concentration for these six stations is 0.08 pci Ra^{226}/l. The mean dissolved uranium concentration for five of the stations (no measurements at RMN 22) is 2.1 μg U/l. The ranges in mean concentrations is wide for radium-226 (0.02 to 0.19 pci/l; mean 0.08 pci/l) and narrower for uranium (1.21 to 2.91 μgm/l; mean 2.1 μg/l).

The uranium to radium-226 concentration ratio (both elements in their dissolved form) ranges from 15.3 to 40.4 and averages 28.6 μgm/pci at "background stations". Uranium in secular equilibrium with radium-226 in rocks or ore may be about 3.0 $\frac{\mu gm U_{tot}}{pci\ Ra^{226}}$, or relatively smaller. The higher ratio in surface water may be caused by a higher degree of mobility for the uranium. The reach from station RMN 25 to 5 is one in which no uranium milling is known to have taken place and here the uranium-radium ratio increases downstream from 56 to 95 μgm/pci.

Radium and Uranium Concentrations Near Uranium Mill Sites [6]

Rifle, Colorado Mill

The Rifle Mill, which has been in "mothballs" during the recent past, lays between RMN stations 1 and 4. Radium concentrations remain equal (within a counting error of, perhaps, 0.05 pci/l) between the stations,

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6. The "operating" mills at Rifle, Uravan, and Moab have "treated" discharges to the rivers on which RMN stations are located.

TABLE - 4

MEAN ANNUAL CONCENTRATION OF RADIUM-226
AT SURFACE WATER MONITORING NETWORK STATIONS

January 1961 - June 1972

(Values in Picocuries per Liter)

No.	RMN STATION Location	YEAR 1961	1962	1963	1964	1965	1966	1967	1968	1969	1970	1971	1972*	Avg. Concentration for Period of Record
1	Colorado River at Silt, Colorado	0.20	0.16	0.24	0.23	0.16	0.20	0.18	0.19	0.17	0.17	0.17	0.16	0.19
4	Colorado River at DeBeque, Colorado	0.20	0.18	0.21	0.21	0.17	0.18	0.19	0.17	0.14	0.12	0.15	0.18	0.17
5	Gunnison River UPS Grand Junction, Colo.	--	0.07	0.11	0.12	0.07	0.09	0.08	0.08	0.07	0.05	0.13	0.10	0.09
6	Colorado River near Fruita, Colorado	--	0.17	0.21	0.18	0.17	0.16	0.17	0.14	0.11	0.18	0.12	0.15	0.16
9	Colorado River UPS Moab, Utah	0.34	0.24	0.29	0.24	0.19	0.25	0.27	0.24	0.17	0.15	0.26	0.17	0.23
10	Colorado River DWS Moab, Utah	0.40	0.33	0.55	0.31	0.27	0.38	0.91	0.37	0.20	0.18	0.22	0.26	0.37
11	Animas River at Durango, Colorado	0.06	0.05	0.06	0.05	0.04	0.05	0.05	0.05	0.05	0.07	0.07	0.10	0.05
12	Animas River near Cedar Hill, N.M.	0.37	0.39	0.18	0.13	0.08	0.09	0.09	0.07	0.05	0.05	0.06	--	0.21
13	San Juan River UPS Farmington, N.M.	--	0.09	0.06	0.05	--	--	--	--	--	--	--	--	0.07
14	San Juan River near Fruitland, N.M.	--	0.11	0.11	0.07	0.06	0.05	0.06	0.06	0.06	--	--	--	0.07
14S	San Juan River DWS Shiprock, N.M.	--	0.10	0.13	0.09	0.06	0.05	--	--	0.06	0.06	0.08	--	0.08
15	San Juan River UPS Mexican Hat, Utah	0.18	0.11	0.13	0.15	0.07	0.08	0.08	0.09	0.08	0.05	0.37	0.15	0.13
16	San Juan River DWS Mexican Hat, Utah	0.33	0.24	0.15	0.09	0.06	0.07	0.08	0.07	0.08	0.04	--	--	0.17
17	San Miguel River at Naturita, Colorado	0.02	0.04	0.05	0.07	0.05	0.05	0.04	0.03	0.04	0.04	0.09	0.10	0.06
18	San Miguel River at Uravan, Colorado	0.14	0.22	0.33	0.13	0.15	0.13	0.12	0.10	0.07	0.09	0.11	0.14	0.17
20	San Miguel River DWS Uravan, Colorado	0.96	0.83	1.33	0.84	0.47	1.89	1.54	3.33	1.67	0.40	0.36	0.39	1.22
21	Dolores River near Bedrock, Colorado	0.85	0.39	0.46	0.60	0.27	0.32	0.49	0.29	0.28	0.35	1.17	0.25	0.48
22	Tomichi Creek near Gunnison, Colorado	0.02	0.02	--	--	--	--	--	--	--	--	--	--	0.02
24	Gunnison River UPS Gunnison, Colorado	0.03	0.09	0.05	0.06	0.04	--	--	--	--	--	--	--	0.06
25	Gunnison River DWS Gunnison, Colorado	0.04	0.05	0.04	0.04	0.03	--	--	--	--	--	--	--	0.04
26	Dolores River near Gateway, Colorado	0.46	1.35	1.02	1.10	0.66	1.17	1.16	1.78	0.84	0.58	0.58	0.41	0.95
28	Yampa River DWS of Maybell, Colorado	--	0.09	0.09	0.09	0.06	--	--	--	0.06	0.05	0.06	0.10	0.08
29	Green River DWS of Green River, Utah	--	0.0	0.10	0.09	--	--	--	--	--	--	--	--	0.09
30	Colorado River at North U.S.-Mex. Border	--	0.14	0.18	0.18	0.16	0.16	0.17	0.14	0.14	0.11	0.11	0.10	0.15
31	Colorado River at Page, Arizona	--	--	0.25	0.24	0.17	0.15	0.14	0.16	0.15	0.13	0.16	0.20	0.17
32	Colorado River near Boulder City, Nevada	--	--	0.33	0.32	0.40	0.40	0.31	0.22	0.19	0.16	0.19	0.10	0.29
33	Colorado River at Metropolitan Water District Intake, Lake Havasu, Cal.-Ariz.	--	--	0.35	0.35	0.35	0.38	0.33	0.25	--	--	--	--	0.34

* Through June, 1972

TABLE - 5

MEAN ANNUAL CONCENTRATION OF URANIUM (TOTAL)
AT SURFACE WATER MONITORING NETWORK STATIONS

September 1962 - June 1972

(Values in Micrograms per Liter)

No.	RMN STATION Location	YEAR											Avg. Concentration for Period of Record
		1962	1963	1964	1965	1966	1967	1968	1969	1970	1971	1972*	
1	Colorado River at Silt, Colorado	3.30	2.80	2.87	3.09	2.12	2.82	3.21	3.39	2.80	3.17	2.54	2.91
4	Colorado River at DeBeque, Colorado	4.87	3.47	3.84	3.28	2.98	4.18	3.94	4.26	3.82	2.56	2.90	3.60
5	Gunnison River UPS Grand Junction, Colorado	12.75	10.44	10.71	8.65	10.81	10.07	9.43	8.57	6.25	5.77	6.55	9.57
6	Colorado River near Fruita, Colorado	9.22	9.87	9.67	6.99	7.66	8.44	7.76	7.62	6.29	3.50	4.75	7.88
9	Colorado River UPS Moab, Utah	9.97	10.94	10.48	7.83	8.46	9.61	8.45	7.83	6.12	6.64	6.00	8.47
10	Colorado River DWS Moab, Utah	12.30	11.85	11.74	9.46	10.22	12.12	10.43	9.80	9.47	8.90	8.19	10.32
11	Animas River at Durango, Colorado	1.15	1.20	1.06	1.46	1.13	1.44	1.60	2.30	1.82	0.80	0.85	1.39
12	Animas River near Cedar Hill, N.M.	6.69	3.45	2.76	2.29	1.74	2.42	2.01	2.35	2.49	1.13	--	2.99
13	San Juan River UPS Farmington, N.M.	5.50	2.26	1.57	--	--	--	--	--	--	--	--	2.83
14	San Juan River near Fruitland, N.M.	6.37	3.77	2.64	1.75	1.98	3.37	2.87	2.75	--	--	--	2.90
14S	San Juan River DWS Shiprock, N.M.	11.07	15.52	13.89	3.75	2.14	--	--	2.90	3.76	2.00	--	8.49
15	San Juan River UPS Mexican Hat, Utah	10.12	7.57	7.85	3.63	3.86	6.09	4.12	3.73	2.63	3.10	1.70	5.44
16	San Juan River DWS Mexican Hat, Utah	10.50	9.26	10.99	5.73	3.88	6.19	4.38	4.07	3.10	--	--	8.07
17	San Miguel River at Naturita, Colorado	1.05	1.36	1.54	2.13	2.63	3.05	3.47	3.00	2.66	2.47	2.01	2.37
18	San Miguel River at Uravan, Colorado	6.95	8.08	3.36	4.19	3.88	4.14	4.50	5.41	3.41	3.46	3.51	4.90
20	San Miguel River DWS Uravan, Colorado	29.86	22.38	33.52	17.43	22.45	15.27	24.50	20.41	12.75	10.24	11.83	19.71
21	Dolores River near Bedrock, Colorado	10.72	15.11	14.17	5.90	7.22	9.02	7.71	7.26	6.66	10.19	4.05	8.46
22	Tomichi Creek near Gunnison, Colorado	--	--	--	--	--	--	--	--	--	--	--	--
24	Gunnison River UPS Gunnison, Colorado	1.75	0.87	1.28	1.37	--	--	--	--	--	--	--	1.21
25	Gunnison River DWS Gunnison, Colorado	2.77	1.62	2.48	2.78	--	--	--	--	--	--	--	2.26
26	Dolores River near Gateway, Colorado	6.09	11.28	26.50	13.94	23.35	20.79	21.84	17.25	9.59	10.45	8.63	13.89
28	Yampa River DWS of Maybell, Colorado	2.37	2.75	2.79	2.74	--	--	--	3.10	1.75	1.35	1.85	2.48
29	Green River DWS of Green River, Utah	6.52	4.97	4.41	--	--	--	--	--	--	--	--	5.01
30	Colorado River at North U.S.-Mex. Border	8.85	8.11	8.37	8.54	6.60	6.05	7.19	7.16	6.53	6.02	5.45	7.32
31	Colorado River at Page, Arizona	--	9.09	8.76	5.48	4.55	5.69	6.72	6.41	6.17	4.53	8.22	6.46
32	Colorado River near Boulder City, Nevada	--	7.37	9.06	9.25	6.92	6.89	7.37	7.61	6.96	6.72	6.40	7.69
33	Colorado River at Metropolitan Water District Intake, Lake Havasu, Cal.-Ariz.	--	8.35	8.32	8.30	7.31	7.26	7.11	--	--	--	--	7.79

* Through June, 1972

while an increase in uranium as the order of 30 percent has always been noted between the stations. Thus, the U/Ra^{226} ratio increases in the downstream direction from 15 to 21 μgm/pci.

Gunnison, Colorado Mill

This mill site, comprised now of a graded tailings pile, lays between RMN stations 22 and 24 upstream and station 25 downstream. As in the case of the Rifle Mill, radium concentrations appear to remain equal at the Gunnison stations while uranium concentrations increase (there are no uranium data for station RMN 22). Uranium to radium ratios increase between RMN stations 24 and 25 (20 to 56 μgm/pci).

Grand Junction, Colorado Mill

This mill was closed and the tailings pile graded a few years ago. The mill site lies between RMN stations 4 and 5 (upstream) and 6. Again, radium concentrations do not appreciably increase through the reach but uranium does increase by about 20 percent. But the uranium/radium ratio remains constant (50 μgm/pci) due to the slight increase (which is not statistically significant) in radium.

Moab, Utah Mill

This operating mill lies between RMN stations 9 and 10. Radium-226 concentrations usually increase from station 9 to 10 by about 60 percent (0.23 to 0.37 pci/l). Uranium concentrations also increase by about 20 percent. The relatively smaller increase in uranium causes the uranium/radium ratio to decrease in the downstream direction (37 to 28 μgm/pci).

Naturita, Colorado Mill

This site is abandoned and the tailings pile has been graded and planted. There is an increase in both radium (180 percent) and uranium (100 percent) from the upstream to the downstream station. The uranium/radium ratio decreases from 39 to 29 μgm/pci.

Uravan, Colorado Mill

The mill at Uravan is operating and lays between RMN stations 18 and 20. Comparison of the stations shows a consistent increase in radium of 60 percent and in increase in uranium of about 300 percent. The uranium/radium ratio therefore decreases from 29 to 16 μgm/pci.

Durango, Colorado Mill

The mill at Durango is closed and the tailings piles exist between RMN stations 11 and 12. Radium concentrations increased some 300 percent on the average, but were relatively constant during the last four years of measurement (1968-1971). The uranium/radium ratio decreases from 28 μgm/pci upstream to 14 μgm/pci downstream.

Shiprock, New Mexico Mill

This mill has generally been abandoned, however, some activity was taking place there in the early seventies. The site lays between RMN stations 14 and 14S. Radium concentrations have been essentially equal through the period of record while uranium concentrations appeared to increase through at least 1970. Thus the uranium ratio increases in the downstream direction from 41 to 106 µgm/pci.

Mexican Hat, Utah Mill

The Mexican Hat site has been abandoned for some time. Drainage from the site enters the San Juan River between RMN stations 15 and 16. With the exception of an increase in radium past the drainage in the early sixties and a possible high measurement in 1971, radium concentrations have been constant. Uranium concentrations generally increase by about 50 percent. The uranium/radium ratio increases slightly from 42 to 48 µgm/pci in the downstream direction.

Thorium, Lead-210 and Polonium-210 Data Collected Near Uranium Mill Sites

Table 6B presents some limited thorium, lead, and polonium data that were collected sporadically through 1971. Gross alpha, gross beta, and strontium-90 data are also presented. These data are summarized as averages for the varying periods of record in Table 6A.

Gross alpha concentrations ranged from a high of 68 pci/l (RMN 20) to 1 pci/l (RMN 4, 11, 17, 18, 29). Gross beta concentrations ranged from a high of 50 pci/l (RMN 20) to a low of 1 ($\pm$2) pci/l (RMN 11). The highest thorium-alpha concentration measured was 8.0 pci/l at station RMN 20 while the lowest was $\leq$0.05 pci/l at RMN 16. Lead-210 concentrations ranged from 0.6 pci/l (RMN 20, 33) to 0.00 pci/l (RMN 4, 9). Strontium-90 concentrations ranged from 9.6 pci/l at RMN 29 to 0.0($\pm$0.6) at RMN 11. And polonium-210 concentrations ranged from 0.30 pci/l at RMN 20 to 0.00($\pm$0.00) pci/l at RMN 4, 16, 20.

It must be recognized that the infrequent nature of these measurements make speculative any conclusions that may be drawn from the majority of the data. The averages in Table 7 suggest some general increase in total alpha activity as one progresses downstream along the Colorado River in Colorado and Utah. The increase does not hold for the San Juan River and yet it does hold for the San Miguel River in Colorado. Total beta activity remains at about twice the total alpha activity. Insufficient data are present for thorium, lead and polonium to make any similiar conclusions. Strontium-90 data suggest an increase in the Colorado River as it progresses downstream and also suggest that concentrations (of Sr-90) may have been higher in the San Juan watershed than in the upper Colorado River watershed. It should be noted that in the majority of cases, the highest strontium-90 concentration occurs during the third quarter of the year (Jul - Sep -- See table 6).

TABLE 6A

AVERAGE CONCENTRATIONS OF SPECIAL RADIOISOTOPES MEASURED AT RMN STATIONS

RMN Station	Representativeness[a]	α	β	β/α	Th-α	Pb-210	Sr-90	Po-210
1 (Silt)	D	3.5	9.6	3	0.3	<0.1	-(.4)	<0.1)
4 (Debeque)	WD	4.1 g	8.6 g	2	<0.1	<0.1	0.8 g	<0.1
6 (Fruita)	E	7.1	15.4	2	0.1	0.1	-	<0.1
9 (Upstream Moab)	WD	8.9 g	15.6 g	2	1.0	<0.1	1.6 g	<0.1
10 (Downstream Moab)	VWD	10.1 g	14.8 g	1	0.1 g	0.1 g	-(0.5)	0.1 g
11 (Upstream Durango)	D	1.1	6.6	6	-	-	0.6	-
14S (Downstream Shiprock)	E	6.4	13.8	2	<0.1	<0.1	-	-(<0.1)
15 (Upstream Mexican Hat)	VWD	5.1 g	12.0 g	2	-(0.1)	<0.1	1.9 g	-(<0.1)
16 (Downstream Mexican Hat)	VWD	5.2 g	11.5 g	2	0.1 g	0.1 g	-(0.8)	<0.1 g
17 (Naturita)	D	2.5	6.3	2	0.1	<0.1	-(0.5)	-(<0.1)
18 (Upstream Uravan)	D	4.4	9.6	2	<0.1	<0.1	-(0.3)	-(<0.1)
20 (Downstream Uravan)	VWD	21.6 g	21.7 g	1	0.7 g	<0.1 g	-	<0.1 g

TABLE 6A (Cont.)

RMN Station	Representativeness [a]	α	β	β/α	Th-α	Pb-210	Sr-90	Po-210
29 (Downstream Green River)	E	2.6	15.6	6	-	-	4.5	-
30 (NIB Border)	E	6.6	7.8	1	-	-	1.4	-
32 (Lake Meade)	E	6.8	11.3	2	-	-	1.5	-
33 (Lake Havasu)	VE	4.6	12.6	3	0.1	0.2	-	-

[a] Distribution Code: VWD: Very Well Distributed; WD: Well Distributed; D: Distributed; E: Early in period of measurements (≈1963-1965). Refers to distribution of measurements with time through measurement period (1963 - 1971).

Parentheses indicate average based upon fewer than 4 measurements.

Dashes indicate no measurements.

g. Sufficient data to serve as basis for comparison of long-term averages.

TABLE 6B

GROSS ALPHA, GROSS BETA, THORIUM ALPHA, LEAD-210, STRONTIUM-90 AND POLONIUM-210
IN COLORADO RIVER BASIN SURFACE WATERS

*Quarters:
1 - Jan-Mar
2 - Apr-Jun
3 - Jul-Sep
4 - Oct-Dec

Station No.: RMN-1
Location: COLORADO RIVER AT
SILT, COLORADO

Year	Quarter*	Gross Alpha Pc/L	Gross Beta Pc/L	Th-Alpha Pc/L	Pb-210 Pc/L	Sr-90 Pc/L	Po-210 Pc/L
1963	3	2	10	--	--	--	--
	4	2	18	--	0.4	--	--
1964	1	2	8	0.4	0.0	--	--
	2	3	20	0.1	0.0	--	--
	3	5	8	0.2	0.1	--	--
	4	11	9	0.2	0.0	--	--
1965	1	2	8	0.1	0.0	--	--
	2	2	8	0.5	0.1	--	--
	3	1.2	6.2	1.2	0.1	--	0.04
	4	--	--	--	--	--	--
1966	1						
	2						
	3						
	4						
1967	1						
	2						
	3						
	4						
1968	1	--	--	0.03 ± 0.04	0.08 ± 0.10	--	0.01 ± 0.02
	2	--	--	0.05 ± 0.04	0.1 ± 0.09	--	0.01 ± 0.02
	3	--	--	--	--	--	--
	4	--	--	--	--	--	--
1969	1	--	--	--	--	--	--
	2	--	--	--	--	--	--
	3	--	--	--	--	--	--
	4	5 ± 1	5 ± 3	--	--	0.4 ± 0.5	--
1970	1	4 ± 1	10 ± 3.7	--	--	--	--
	2	4 ± 1	13.7 ± 3.3	--	--	--	--
	3	2.7 ± 1	7.7 ± 3.3	--	--	--	--
	4	3.3 ± 1	4.7 ± 3.3	--	--	--	--
1971	1	4 ± 1	9 ± 3	--	--	--	--
	2	--	--	--	--	--	--
	3	--	--	--	--	--	--
	4	--	--	--	--	--	--
1972	1						
	2						

TABLE 6B(Cont.)

GROSS ALPHA, GROSS BETA, THORIUM ALPHA, LEAD-210, STRONTIUM-90 AND POLONIUM-210 IN COLORADO RIVER BASIN SURFACE WATERS

Station No.: RMN-4
Location: COLORADO RIVER AT DEBEQUE, COLORADO

*Quarters:
1 - Jan-Mar
2 - Apr-Jun
3 - Jul-Sep
4 - Oct-Dec

Year	Quarter*	Gross Alpha Pc/L	Gross Beta Pc/L	Th-Alpha Pc/L	Pb-210 Pc/L	Sr-90 Pc/L	Po-210 Pc/L
1963	3	3	11	--	--	2.8	--
	4	3	22	--	--	0.9	--
1964	1	3	9	--	--	0.9	--
	2	1	23	--	--	1.8	--
	3	2	13	--	--	1.1	--
	4	8	13	--	--	0.7	--
1965	1	9	8	--	--	1.1	--
	2	2	8	--	--	1.2	--
	3	2.9	7.0	--	--	1.2	--
	4	5.3	9.1	--	--	0.7	--
1966	1	3.7	8.2	--	--	0.8	--
	2	3.3	4.5	--	--	0.6	--
	3	3.3	9.0	--	--	0.8	--
	4	4.6	8.4	--	--	0.4	--
1967	1	6.1	7.6	--	--	0.5	--
	2	5.1	6.6	--	--	0.5 ± 0.1	--
	3	3.9 ± 0.4	9.0 ± 1.4	--	--	0.9 ± 0.1	--
	4	6.0 ± 0.6	9.2 ± 2.0	--	--	0.8 ± 0.1	--
1968	1	5.8 ± 1.1	6.3 ± 1.6	0.03 ± 0.04	0.1 ± 0.1	1.8 ± 0.2	00 ± 0.02
	2	3.2 ± 0.8	3.8 ± 1.5	0.05 ± 0.04	0.01 ± 0.1	0.5 ± 0.1	0.03 ± 0.03
	3	3.9 ± 0.8	5.6 ± 2.0	0.05 ± 0.04	0.00 ± 0.00	0.1 ± 0.1	0.00 ± 0.00
	4	3.4 ± 0.8	7.0 ± 2.0	--	0.00	0.1 ± 0.5	--
1969	1	4.4 ± 1.0	5.6 ± 1.1	--	0.00	0.3 ± 0.1	--
	2	2.0 ± 0.4	7.1 ± 1.5	--	0.00	0.5 ± 0.1	--
	3	2.6 ± 0.7	5.0 ± 0.9	--	0.00	0.4 ± 0.1	--
	4	5 ±1	3 ±3	--	--	0.5 ± 0.5	--
1970	1	4.7 ±1	6.7 ±3.7	--	--	--	--
	2	2.7 ±1	11 ±3.3	--	--	--	--
	3	5 ±1	9 ±3.3	--	--	--	--
	4	4.3 ±1	5.2 ±3.2	--	--	--	--
1971	1	6 ±1	8 ±3	--	--	--	--
	2						
	3						
	4						
1972	1						
	2						

TABLE 6B (Cont.)

GROSS ALPHA, GROSS BETA, THORIUM ALPHA, LEAD-210, STRONTIUM-90 AND POLONIUM-210 IN COLORADO RIVER BASIN SURFACE WATERS

*Quarters:
1 - Jan-Mar
2 - Apr-Jun
3 - Jul-Sep
4 - Oct-Dec

Station No.: RMN-6
Location: COLORADO RIVER NEAR FRUITA, COLORADO

Year	Quarter*	Gross Alpha Pc/L	Gross Beta Pc/L	Th-Alpha Pc/L	Pb-210 Pc/L	Sr-90 Pc/L	Po-210 Pc/L
1963	3	7	41	0.1	0.1	--	--
	4	5	11	0.0	0.3	--	--
1964	1	7	22	0.5	0.1	--	--
	2	2	14	0.1	0.0	--	--
	3	9	18	0.1	0.1	--	--
	4	14	10	0.3	0.1	--	--
1965	1	10	10	0.1	0.1	--	--
	2	3	7	0.1	0.1	--	--
	3	7.2	6.3	0.2	0.3	--	0.04
	4	--	--	--	--	--	--
1966	1						
	2						
	3						
	4						
1967	1						
	2						
	3						
	4						
1968	1	--	--	0.02 ± 0.04	0.02 ± 0.06	--	0.04 ± 0.02
	2	--	--	0.05 ± 0.03	0.17 ± 0.01	--	0.06 ± 0.02
	3	--	--	--	--	--	--
	4	--	--	--	--	--	--
1969	1						
	2						
	3						
	4						
1970	1						
	2						
	3						
	4						
1971	1						
	2						
	3						
	4						
1972	1						
	2						

TABLE 6B (Cont.)

GROSS ALPHA, GROSS BETA, THORIUM ALPHA, LEAD-210, STRONTIUM-90 AND POLONIUM-210
IN COLORADO RIVER BASIN SURFACE WATERS

Station No.: RMN-9
Location: COLORADO RIVER UPS
MOAB, UTAH

*Quarters:
1 - Jan-Mar
2 - Apr-Jun
3 - Jul-Sep
4 - Oct-Dec

Year	Quarter*	Gross Alpha Pc/L	Gross Beta Pc/L	Th-Alpha Pc/L	Pb-210 Pc/L	Sr-90 Pc/L	Po-210 Pc/L
1963	3	8	33	--	--	8.4	--
	4	12	20	--	--	1.6	--
1964	1	5	12	--	--	1.2	--
	2	2	16	--	--	2.2	--
	3	10	21	--	--	4.8	--
	4	10	14	--	--	0.9	--
1965	1	9	14	--	--	1.0	--
	2	2	8	--	--	1.4	--
	3	3.9	12	--	--	3.2	--
	4	10	13	--	--	1.0	--
1966	1	11	15	--	--	1.1	--
	2	6.7	7.0	--	--	0.9	--
	3	10	18	--	--	1.6	--
	4	10	15	--	--	0.9	--
1967	1	13	15	--	--	0.6	--
	2	6.5	9.5	--	--	0.8 ± 0.1	--
	3	10 ± 1	21 ± 2	--	--	3.6 ± 0.3	--
	4	11 ± 1	7.9 ± 2.5	--	--	2.6 ± 0.2	--
1968	1	11 ± 2	5.6 ± 1.4	0.10 ± 0.04	0.0 ± 0.09	0.9 ± 0.1	0.08 ± 0.02
	2	5.3 ± 0.8	7.4 ± 1.5	3 ± 0.13	0.1 ± 0.9	0.8 ± 0.1	0.04 ± 0.00
	3	7.3 ± 1.1	15 ± 2	0.13 ± 0.04	0.00	1.6 ± 0.1	--
	4	8.6 ± 1.5	20 ± 4	--	0.00	0.1 ± 0.6	--
1969	1	8.4 ± 1.7	11 ± 3	--	0.00	0.4 ± 0.1	--
	2	4.9 ± 0.7	5.9 ± 3.6	--	0.00	0.7 ± 0.1	--
	3	16 ± 2	18 ± 4	--	0.00	1.3 ± 0.1	--
	4	14.7 ± 1.7	25.3 ± 3.3	--	--	0.8 ± 0.6	--
1970	1	8.5 ± 1	10.5 ± 4.5	--	--	0.5 ± 0.3	--
	2	11 ± 1	19 ± 4.5	--	--	--	--
	3	6 ± 1	16 ± 4	--	--	--	--
	4	18 ± 1.7	46 ± 4.7	--	--	--	--
1971	1	7 ± 1	14 ± 3	--	--	--	--
	2						
	3						
	4						
1972	1						
	2						

TABLE 6B (Cont.)

GROSS ALPHA, GROSS BETA, THORIUM ALPHA, LEAD-210, STRONTIUM-90 AND POLONIUM-210 IN COLORADO RIVER BASIN SURFACE WATERS

*Quarters:
1 - Jan-Mar
2 - Apr-Jun
3 - Jul-Sep
4 - Oct-Dec

Station No.: RMN-10
Location: COLORADO RIVER DWS
MOAB, UTAH

Year	Quarter*	Gross Alpha Pc/L	Gross Beta Pc/L	Th-Alpha Pc/L	Pb-210 Pc/L	Sr-90 Pc/L	Po-210 Pc/L
1963	3	9	31	0.1	0.0	--	--
	4	4	8	0.2	0.1	--	--
1964	1	6	16	0.0	0.1	--	--
	2	3	14	0.0	0.0	--	--
	3	8	22	0.4	0.2	--	--
	4	13	13	0.2	0.4	--	--
1965	1	8	9	0.1	0.3	--	--
	2	4	8	0.0	0.1	--	--
	3	5	13	0.5	0.0	--	0.05
	4	12	13	0.0	0.1	--	0.12
1966	1	12	12	0.0	0.3	--	0.05
	2	7.6	9.1	0.0	0.3	--	0.09
	3	13	18	0.1	0.1	--	0.10
	4	17	14	0.1	0.1	--	0.27
1967	1	22	19	0.1	0.3	--	0.44
	2	8.1	13	0.09	0.0	--	0.61
	3	13 ± 1	15 ± 2	0.09 ± 0.02	0.0 ± 0.1	--	0.04 ± 0.01
	4	14 ± 1	12 ± 4	0.32 ± 0.03	0.0 ± 0.1	--	0.09 ± 0.01
1968	1	11 ± 1	10 ± 1	0.09 ± 0.04	0.08 ± 0.09	--	0.02 ± 0.03
	2	6.9 ± 0.8	8.6 ± 1.6	0.14 ± 0.04	0.0 ± 0.1	--	0.06 ± 0.03
	3	7.5 ± 1.1	19 ± 2	0.17 ± 0.05	0.5 ± 0.1	--	0.21 ± 0.05
	4	8.5 ± 1.5	17 ± 4	0.02 ± 0.05	0.2 ± 0.1	--	0.00 ± 0.04
1969	1	8.0 ± 0.8	6.8 ± 2.8	0.00 ± 0.05	0.1 ± 0.1	--	0.00 ± 0.04
	2	4.4 ± 1.1	5.7 ± 2.9	0.01 ± 0.05	0.0 ± 0.1	--	0.01 ± 0.04
	3	14 ± 2	13 ± 3	0.01 ± 0.05	0.2 ± 0.2	--	0.08 ± 0.06
	4	19 ± 2.7	26 ± 7	0.02 ± 0.05	--	0.6 ± 0.6	--
1970	1	14 ± 2	11.3 ± 4	--	--	0.5 ± 0.3	--
	2	10 ± 1	23.5 ± 3.8	--	--	--	--
	3	18 ± 1.3	29 ± 4.5	--	--	--	--
	4	9.3 ± 1	12 ± 3.3	--	--	--	--
1971	1	15 ± 2	19 ± 3	--	--	--	--
	2						
	3						
	4						
1972	1						
	2						

TABLE 6B (Cont.)

GROSS ALPHA, GROSS BETA, THORIUM ALPHA, LEAD-210, STRONTIUM-90 AND POLONIUM-210 IN COLORADO RIVER BASIN SURFACE WATERS

Station No.: RMN-11
Location: ANIMAS RIVER AT DURANGO, COLORADO

*Quarters:
1 - Jan-Mar
2 - Apr-Jun
3 - Jul-Sep
4 - Oct-Dec

Year	Quarter*	Gross Alpha Pc/L	Gross Beta Pc/L	Th-Alpha Pc/L	Pb-210 Pc/L	Sr-90 Pc/L	Po-210 Pc/L
1963	3	1	5	--	--	0.9	--
	4	1	5	--	--	0.7	--
1964	1	1	9	--	--	0.9	--
	2	1	8	--	--	1.5	--
	3	2	7	--	--	0.8	--
	4	2	9	--	--	0.7	--
1965	1	2	7	--	--	1.2	--
	2	0	5	--	--	0.9	--
	3	0.6	3.7	--	--	0.7	--
	4	--	--	--	--	--	--
1966	1						
	2						
	3						
	4						
1967	1						
	2						
	3						
	4						
1968	1						
	2						
	3						
	4						
1969	1						
	2						
	3						
	4	1 ± 1	1 ± 2	--	--	0.0 ± 0.6	--
1970	1	1 ± 1	6 ± 2	--	--	0.4 ± 0.3	--
	2	1 ± 1	13 ± 2	--	--	0.5 ± 0.4	--
	3	2 ± 0.5	7 ± 2	--	--	--	--
	4	1 ± 1	8 ± 2	--	--	--	--
1971	1						
	2						
	3						
	4						
1972	1						
	2						

TABLE 6B(Cont.)

GROSS ALPHA, GROSS BETA, THORIUM ALPHA, LEAD-210, STRONTIUM-90 AND POLONIUM-210
IN COLORADO RIVER BASIN SURFACE WATERS

*Quarters:
1 - Jan-Mar
2 - Apr-Jun
3 - Jul-Sep
4 - Oct-Dec

Station No.: RMN-14S
Location: SAN JUAN RIVER DWS
SHIPROCK, N. M.

Year	Quarter*	Gross Alpha Pc/L	Gross Beta Pc/L	Th-Alpha Pc/L	Pb-210 Pc/L	Sr-90 Pc/L	Po-210 Pc/L
1963	3	12	16	0.0	0.1	--	--
	4	7	14	0.1	0.0	--	--
1964	1	3	9	0.0	0.0	--	--
	2	8	14	0.2	0.0	--	--
	3	6	17	0.2	0.1	--	--
	4	14	19	0.2	0.4	--	--
1965	1	3	11	0.1	0.1	--	--
	2	2	7	0.0	0.0	--	--
	3	2.5	9.0	0.0	0.2	--	0.0
	4	--	--	--	--	--	--
1966	1						
	2						
	3						
	4						
1967	1						
	2						
	3						
	4						
1968	1						
	2						
	3						
	4	7 ± 1	24 ± 5	--	--	--	--
1969	1	6 ± 1	14 ± 2	--	--	--	--
	2						
	3						
	4						
1970	1						
	2						
	3						
	4						
1971	1						
	2						
	3						
	4						
1972	1						
	2						

TABLE 6B (Cont.)

GROSS ALPHA, GROSS BETA, THORIUM ALPHA, LEAD-210, STRONTIUM-90 AND POLONIUM-210 IN COLORADO RIVER BASIN SURFACE WATERS

*Quarters:
1 - Jan-Mar
2 - Apr-Jun
3 - Jul-Sep
4 - Oct-Dec

Station No.: RMN-15
Location: SAN JUAN RIVER UPS
MEXICAN HAT, UTAH

Year	Quarter*	Gross Alpha Pc/L	Gross Beta Pc/L	Th-Alpha Pc/L	Pb-210 Pc/L	Sr-90 Pc/L	Po-210 Pc/L
1963	3	6	29	--	--	6.0	--
	4	4	14	--	--	3.2	--
1964	1	4	10	--	--	2.0	--
	2	3	14	--	--	2.9	--
	3	6	21	--	--	4.4	--
	4	11	10	--	--	1.9	--
1965	1	3	13	--	--	2.7	--
	2	--	--	--	--	--	--
	3	--	--	--	--	--	--
	4	3.8	7.8	--	--	1.4	--
1966	1	3.4	6.8	--	--	1.2	--
	2	2.6	5.0	--	--	0.9	--
	3	7.0	17	--	--	3.1	--
	4	5.5	9.7	--	--	1.3	--
1967	1	6.4	7.2	--	--	1.0	--
	2	7.1	9.9	--	--	1.3 ± 0.1	--
	3	7.4 ± 0.6	19 ± 2	--	--	3.1 ± 0.2	--
	4	5.4 ± 0.4	14 ± 3	--	--	2.0 ± 0.2	--
1968	1	5.2 ± 0.8	6.3 ± 1.1	0.15 ± 0.04	--	1.2 ± 0.2	--
	2	3.4 ± 0.5	5.3 ± 1.2	0.08 ± 0.02	0.05 ± 0.09	0.8 ± 0.1	0.04 ± 0.03
	3	--	--	--	--	--	--
	4	--	--	--	--	--	--
1969	1	4.2 ± 0.5	1.8 ± 1.9	--	0.0	1.1 ± 0.1	--
	2	1.9 ± 0.6	3.4 ± 2.1	--	0.0	0.7 ± 0.1	--
	3	3.1 ± 0.7	9.7 ± 1.7	--	0.0	2.1 ± 0.1	--
	4	15 ± 1	33 ± 3	--	--	1 ± 0.7	--
1970	1	5 ± 1	13 ± 2	--	--	0.9 ± 0.4	--
	2	5 ± 1	8 ± 2	--	--	0.7 ± 0.4	--
	3	--	--	--	--	--	--
	4	3 ± 1	8 ± 3	--	--	--	--
1971	1	3 ± 1	17 ± 2	--	--	--	--
	2						
	3						
	4						
1972	1						
	2						

TABLE 6B (Cont.)

GROSS ALPHA, GROSS BETA, THORIUM ALPHA, LEAD-210, STRONTIUM-90 AND POLONIUM-210
IN COLORADO RIVER BASIN SURFACE WATERS

*Quarters:
1 - Jan-Mar
2 - Apr-Jun
3 - Jul-Sep
4 - Oct-Dec

Station No.: RMN-16
Location: SAN JUAN RIVER DWS
MEXICAN HAT, UTAH

Year	Quarter*	Gross Alpha Pc/L	Gross Beta Pc/L	Th-Alpha Pc/L	Pb-210 Pc/L	Sr-90 Pc/L	Po-210 Pc/L
1963	3	8	30	0.4	0.2	--	--
	4	5	13	0.3	0.1	--	--
1964	1	4	13	0.2	0.1	--	--
	2	4	10	0.3	0.2	--	--
	3	6	24	0.6	0.2	--	--
	4	14	14	1.7	0.5	--	--
1965	1	8	13	0.1	0.0	--	--
	2	--	--	--	--	--	--
	3	--	--	--	--	--	--
	4	3.2	7.3	0.0	0.2	--	0.01
1966	1	4.4	7.2	0.0	0.1	--	0.00
	2	3.3	5.1	0.0	0.2	--	0.14
	3	5.3	17	0.1	0.1	--	0.03
	4	4.7	6.8	0.1	0.2	--	0.01
1967	1	6.2	7.7	0.0	0.0	--	0.03
	2	6.1	11	0.0	0.2	--	0.01
	3	6.2 ± 0.5	14 ± 2	0.03 ± 0.02	0.1 ± 0.1	--	0.02 ± 0.01
	4	4.3 ± 0.5	18 ± 3	0.11 ± 0.02	0.0 ± 0.1	--	0.00 ± 0.01
1968	1	7.4 ± 0.9	6.0 ± 0.8	0.02 ± 0.07	0.04± 0.09	--	0.0 ± 1.0
	2	3.1 ± 0.5	7.6 ± 1.2	0.07 ± 0.03	0.02± 0.09	--	0.01 ± 0.03
	3	--	--	--	--	--	--
	4	--	--	--	--	--	--
1969	1	3.5 ± 0.5	8.0 ± 2.0	0.00 ± 0.05	0.0 ± 0.1	--	0.00 ± 0.05
	2	2.2 ± 0.7	4.1 ± 2.1	0.00 ± 0.05	0.0 ± 0.1	--	0.02 ± 0.04
	3	3.1 ± 0.7	9.8 ± 1.7	0.00 ± 0.05	0.1 ± 0.1	--	0.01 ± 0.04
	4	--	--	--	--	--	--
1970	1	4 ± 1	10 ± 2	--	--	0.7 ± 0.3	--
	2	5 ± 1	11 ± 3	--	--	1.0 ± 0.4	--
	3	4 ± 1	10 ± 3	--	--	--	--
	4	--	--	--	--	--	--
1971	1						
	2						
	3						
	4						
1972	1						
	2						

TABLE 6R (Cont.)

GROSS ALPHA, GROSS BETA, THORIUM ALPHA, LEAD-210, STRONTIUM-90 AND POLONIUM-210 IN COLORADO RIVER BASIN SURFACE WATERS

Station No.: RMN-17
Location: SAN MIGUEL RIVER AT NATURITA, COLORADO

*Quarters:
1 - Jan-Mar
2 - Apr-Jun
3 - Jul-Sep
4 - Oct-Dec

Year	Quarter*	Gross Alpha Pc/L	Gross Beta Pc/L	Th-Alpha Pc/L	Pb-210 Pc/L	Sr-90 Pc/L	Po-210 Pc/L
1963	3	2	7	0.1	0.0	--	--
	4	2	7	0.1	0.0	--	--
1964	1	2	7	0.1	0.1	--	--
	2	1	10	0.0	0.0	--	--
	3	2	7	0.2	0.2	--	--
	4	2	5	0.1	0.0	--	--
1965	1	3	3	0.0	0.1	--	--
	2	1	6	0.1	0.1	--	--
	3	1.3	5.4	0.6	0.0	--	0.01
	4	--	--	--	--	--	--
1966	1						
	2						
	3						
	4						
1967	1						
	2						
	3						
	4	4	--	--	--	--	--
1968	1						
	2						
	3						
	4						
1969	1						
	2						
	3						
	4	--	4 ± 2	--	--	0.5 ± 0.5	--
1970	1	3.7 ± 1	3.7 ± 2.7	--	--	--	--
	2	3.7 ± 0.83	10.7 ± 2	--	--	--	--
	3	3 ± 0.83	7 ± 2	--	--	--	--
	4	3 ± 1	5 ± 3	--	--	--	--
1971	1	4 ± 1	7 ± 2	--	--	--	--
	2						
	3						
	4						
1972	1						
	2						

TABLE 6B (Cont.)

GROSS ALPHA, GROSS BETA, THORIUM ALPHA, LEAD-210, STRONTIUM-90 AND POLONIUM-210 IN COLORADO RIVER BASIN SURFACE WATERS

Station No.: RMN-18
Location: SAN MIGUEL RIVER AT URAVAN, COLORADO

*Quarters:
1 - Jan-Mar
2 - Apr-Jun
3 - Jul-Sep
4 - Oct-Dec

Year	Quarter*	Gross Alpha Pc/L	Gross Beta Pc/L	Th-Alpha Pc/L	Pb-210 Pc/L	Sr-90 Pc/L	Po-210 Pc/L
1963	3	--	--	--	--	--	--
	4	--	--	--	--	--	--
1964	1	--	--	--	--	--	--
	2	--	--	--	--	--	--
	3	--	--	--	--	--	--
	4	--	--	--	--	--	--
1965	1	5	6	0.0	0.0	--	--
	2	1	7	0.0	0.1	--	--
	3	2.7	8.6	0.0	0.1	--	0.01
	4	--	--	--	--	--	--
1966	1						
	2						
	3						
	4						
1967	1						
	2						
	3						
	4						
1968	1	--	--	0.1 ± 0.04	0.02 ± 0.09	--	0.04 ± 0.02
	2	--	--	0.08 ± 0.02	0.12 ± 0.09	--	0.01 ± 0.03
	3						
	4						
1969	1						
	2						
	3						
	4	4 ± 1	9 ± 3	--	--	0.5 ± 0.6	--
1970	1	4.3 ± 1	10.3 ± 3.3	--	--	0.2 ± 0.3	--
	2	4.7 ± 1	15 ± 3.7	--	--	--	--
	3	10 ± 1.4	19 ± 4	--	--	--	--
	4	4.5 ± 1	4 ± 3.5	--	--	--	--
1971	1	4 ± 1	8 ± 3	--	--	--	--
	2						
	3						
	4						
1972	1						
	2						

TABLE 6B (Cont.)

GROSS ALPHA, GROSS BETA, THORIUM ALPHA, LEAD-210, STRONTIUM-90 AND POLONIUM-210 IN COLORADO RIVER BASIN SURFACE WATERS

*Quarters:
1 - Jan-Mar
2 - Apr-Jun
3 - Jul-Sep
4 - Oct-Dec

Station No.: RMN-20
Location: SAN MIGUEL RIVER DWS
URAVAN, COLORADO

Year	Quarter*	Gross Alpha Pc/L	Gross Beta Pc/L	Th-Alpha Pc/L	Pb-210 Pc/L	Sr-90 Pc/L	Po-210 Pc/L
1963	3	13	23	1.1	0.6	--	--
	4	19	43	8.0	0.4	--	--
1964	1	20	26	0.8	0.2	--	--
	2	12	33	1.0	0.1	--	--
	3	16	23	0.1	0.3	--	--
	4	27	20	0.1	0.3	--	--
1965	1	16	17	0.4	0.0	--	--
	2	4	10	0.2	0.1	--	--
	3	5.1	11	0.1	0.1	--	0.11
	4	17	12	0.1	0.2	--	0.21
1966	1	20	14	0.2	0.3	--	0.00
	2	5.5	5.9	0.4	0.1	--	0.01
	3	30	35	1.5	0.1	--	0.06
	4	40	24	1.0	0.0	--	0.18
1967	1	23	16	0.3	0.2	--	0.06
	2	8.1	11	0.18	0.0	--	0.18
	3	12 ± 1	18 ± 2	0.41 ± 0.02	0.0 ± 0.1	--	0.03 ± 0.01
	4	23 ± 1	19 ± 3	0.53 ± 0.03	0.0 ± 0.0	--	0.09 ± 0.02
1968	1	48 ± 2	34 ± 2	1.3 ± 0.1	0.19 ± 0.01	--	0.17 ± 0.03
	2	6.3 ± 0.7	8.6 ± 2.0	0.41 ± 0.03	0.11 ± 0.09	--	0.06 ± 0.03
	3	20 ± 2	19 ± 2	0.56 ± 0.06	0.1 ± 0.1	--	0.00 ± 0.05
	4	68 ± 3	47 ± 7	0.61 ± 0.07	0.5 ± 0.1	--	0.30 ± 0.05
1969	1	52 ± 3	50 ± 5	0.34 ± 0.06	0.3 ± 0.1	--	0.12 ± 0.05
	2	7.9 ± 1.3	9.6 ± 2.8	0.04 ± 0.05	0.0 ± 0.1	--	0.05 ± 0.04
	3	14 ± 1	9.1 ± 2.8	0.15 ± 0.05	0.0 ± 0.1	--	0.02 ± 0.04
	4	24.7 ± 1.7	21.8 ± 3.3	--	--	--	--
1970	1	32 ± 2.8	27.5 ± 3.8	--	--	--	--
	2						
	3						
	4						
1971	1						
	2						
	3						
	4						
1972	1						
	2						

TABLE 6B (Cont.)

GROSS ALPHA, GROSS BETA, THORIUM ALPHA, LEAD-210, STRONTIUM-90 AND POLONIUM-210
IN COLORADO RIVER BASIN SURFACE WATERS

Station No.: RMN-29
Location: GREEN RIVER DWS OF
GREEN RIVER, UTAH

*Quarters:
1 - Jan-Mar
2 - Apr-Jun
3 - Jul-Sep
4 - Oct-Dec

Year	Quarter*	Gross Alpha Pc/L	Gross Beta Pc/L	Th-Alpha Pc/L	Pb-210 Pc/L	Sr-90 Pc/L	Po-210 Pc/L
1963	3	3	26	--	--	9.6	--
	4	3	14	--	--	3.3	--
1964	1	1	10	--	--	2.5	--
	2	3	12	--	--	3.2	--
	3	3	16	--	--	4.0	--
	4	-	--	--	--	--	--
1965	1						
	2						
	3						
	4						
1966	1						
	2						
	3						
	4						
1967	1						
	2						
	3						
	4						
1968	1						
	2						
	3						
	4						
1969	1						
	2						
	3						
	4						
1970	1						
	2						
	3						
	4						
1971	1						
	2						
	3						
	4						
1972	1						
	2						

TABLE 6R (Cont.)

GROSS ALPHA, GROSS BETA, THORIUM ALPHA, LEAD-210, STRONTIUM-90 AND POLONIUM-210
IN COLORADO RIVER BASIN SURFACE WATERS

*Quarters:
1 - Jan-Mar
2 - Apr-Jun
3 - Jul-Sep
4 - Oct-Dec

Station No.: RMN-30
Location: COLORADO RIVER AT
NORTH U.S.-MEX. BORDER

Year	Quarter*	Gross Alpha Pc/L	Gross Beta Pc/L	Th-Alpha Pc/L	Pb-210 Pc/L	Sr-90 Pc/L	Po-210 Pc/L
1963	3	6	9	--	--	1.2	--
	4	4	10	--	--	1.5	--
1964	1	3	11	--	--	1.3	--
	2	4	10	--	--	1.5	--
	3	11	10	--	--	1.2	--
	4	18	22	--	--	0.7	--
1965	1	8	10	--	--	1.2	--
	2	4	14	--	--	1.4	--
	3	4.6	13	--	--	1.6	--
	4	--	--	--	--	--	--
1966	1						
	2						
	3						
	4						
1967	1						
	2						
	3						
	4						
1968	1						
	2						
	3						
	4						
1969	1						
	2						
	3						
	4						
1970	1						
	2						
	3	8 ± 1	13 ± 4	--	--	--	--
	4	3 ± 1	10 ± 4	--	--	--	--
1971	1						
	2						
	3						
	4						
1972	1						
	2						

TABLE 6B (Cont.)

GROSS ALPHA, GROSS BETA, THORIUM ALPHA, LEAD-210, STRONTIUM-90 AND POLONIUM-210 IN COLORADO RIVER BASIN SURFACE WATERS

Station No.: RMN-32
Location: COLORADO RIVER NEAR BOULDER CITY, NEV.

*Quarters:
1 - Jan-Mar
2 - Apr-Jun
3 - Jul-Sep
4 - Oct-Dec

Year	Quarter*	Gross Alpha Pc/L	Gross Beta Pc/L	Th-Alpha Pc/L	Pb-210 Pc/L	Sr-90 Pc/L	Po-210 Pc/L
1963	3	3	5	--	--	1.1	--
	4	3	10	--	--	1.2	--
1964	1	4	4	--	--	1.4	--
	2	5	9	--	--	1.4	--
	3	8	12	--	--	1.4	--
	4	19	16	--	--	1.6	--
1965	1	6	11	--	--	2.0	--
	2	7	12	--	--	2.0	--
	3	5.9	12	--	--	2.0	--
	4	--	--	--	--	--	--
1966	1						
	2						
	3						
	4						
1967	1						
	2						
	3						
	4						
1968	1						
	2						
	3						
	4	7 ± 1	18 ± 5	--	--	--	--
1969	1	7 ± 1	16 ± 3	--	--	--	--
	2						
	3						
	4						
1970	1						
	2						
	3						
	4						
1971	1						
	2						
	3						
	4						
1972	1						
	2						

TABLE 6B (Cont.)

GROSS ALPHA, GROSS BETA, THORIUM ALPHA, LEAD-210, STRONTIUM-90 AND POLONIUM-210
IN COLORADO RIVER BASIN SURFACE WATERS

*Quarters:
1 - Jan-Mar
2 - Apr-Jun
3 - Jul-Sep
4 - Oct-Dec

Station No.: RMN-33
Location: COLORADO RIVER AT METROPOLITAN WATER DISTRICT INTAKE, LAKE HAVASU, CAL.-ARIZ.

Year	Quarter*	Gross Alpha Pc/L	Gross Beta Pc/L	Th-Alpha Pc/L	Pb-210 Pc/L	Sr-90 Pc/L	Po-210 Pc/L
1963	3	5	9	0.0	0.2	--	--
	4	3	22	0.0	0.2	--	--
1964	1	4	9	0.1	0.1	--	--
	2	4	11	0.2	0.0	--	--
	3	8	10	0.1	0.6	--	--
	4	4	15	0.2	0.3	--	--
1965	1	5	12	0.0	0.0	--	--
	2	4	13	0.2	0.1	--	--
	3	--	--	--	--	--	--
	4	--	--	--	--	--	--
1966	1						
	2						
	3						
	4						
1967	1						
	2						
	3						
	4						
1968	1						
	2						
	3						
	4						
1969	1						
	2						
	3						
	4						
1970	1						
	2						
	3						
	4						
1971	1						
	2						
	3						
	4						
1972	1						
	2						

Often the highest concentrations of these isotopes were measured at station RMN-20, located downstream of Uravan, Colorado. Samples from this station generally showed a significant increase in α, β, and thorium-α activity over the upstream station (RMN 18), though the upstream station was infrequently analyzed. A similar, though smaller increase was measured between stations RMN 17 and 18 (Naturita to upstream of Uravan). Measurements at stations RMN 1 and 4 suggested an increase in alpha activity, but a decrease in beta activity. Station pairs 9-10 and 15-16 appear to have shown the same "inconsistency".

The ratio of total beta activity to total alpha activity remains at about 2 throughout the Network. Significant exceptions are at stations RMN 11 (Durango) and RMN 29 (Green River) where the alpha activity is low and the ratios are about 6.

None of the radio-isotopes listed in Tables 6 and 7 was found to exceed the recommended limit concentrations in water.

GRAPHIC REPRESENTATIONS OF RADIUM-226 CONCENTRATIONS (DISSOLVED) AND FLOW AT RMN STATIONS

This section consists primarily of plots of radium-226 concentrations (dissolved) and mean monthly flows of the streams sampled. The radium data have been plotted as monthly averages wherever samples were collected more frequently. The flow data were obtained from U.S. Geological Survey long-term stations and do not necessarily coincide with the location of the Radiological Monitoring Network Stations other than as the flow records portray high and low flows, and any long-term trends in flows.

The purpose of the comparison between radium-226 concentrations and flow is to show a generally inverse relationship that has been found in the course of the measurements. Figure 2, for station RMN 1, serves to show the inverse relationship between radium-226 concentrations (dissolved) and flow. The relationships are evident at many of the other Network stations also.

Figure 29 presents a simple statistical analysis of the radium-226 data obtained from five surface water locations in western Colorado. The data are presented to show the changes in distribution of radium-226 concentrations as one progresses downstream from the headwaters of the San Miguel River near Naturita, Colorado, through areas of uranium deposits and uranium mill sites to Gateway, Colorado on the Dolores River. The bottom family of lines represent percentages (of the total number of measurements at a station) of measurements falling within the specific concentration range. The upper family of lines represent the cumulative percentage of measurements at each station. The Naturita station (RMN 17) may be considered to measure "background" concentrations and it is obvious that the vast majority of determinations showed less than 0.1 pci/l Ra-226.

The next station (RMN 18) is located upstream of Uravan, Colorado and many miles downstream of the Naturita station. An abandoned mill site and tailings pile is located at Vancorum between RMN 17 and 18. The data shows a shift of the median radium content of the San Miguel to in excess of 0.1 pci/l.

The third station (RMN 20) is downstream of the Union Carbide Uranium Mill at Uravan and a significant upward shift in the median valve is noted as the cumulative percentage line is moved to the right and the slope of that line is decreased.

Station RMN 21 is located on the Dolores River upstream of the San Miguel River. Two abandoned uranium mill sites and some uranium mines are located upstream of the station. Note that the distribution of concentrations is considerably "degraded" from that of the Naturita station and that a configuration is somewhat similar to that obtained from the "upstream-of-Uravan" station.

Station RMN 26 reflects the addition of the San Miguel River to the Dolores River and shows the effects of dillution of San Miguel water as well as contamination by the San Miguel. Drainage from a few uranium mines does exist between stations RMN 21 and RMN 26, but the mine drainage has usually been of sufficiently low volume so as to be "lost" in the Dolores River.

Figure 29 essentially portrays degradation of a river system caused, undoubtedly, by the presence of uranium mineralization or concentration as well as by man's refining of uranium.

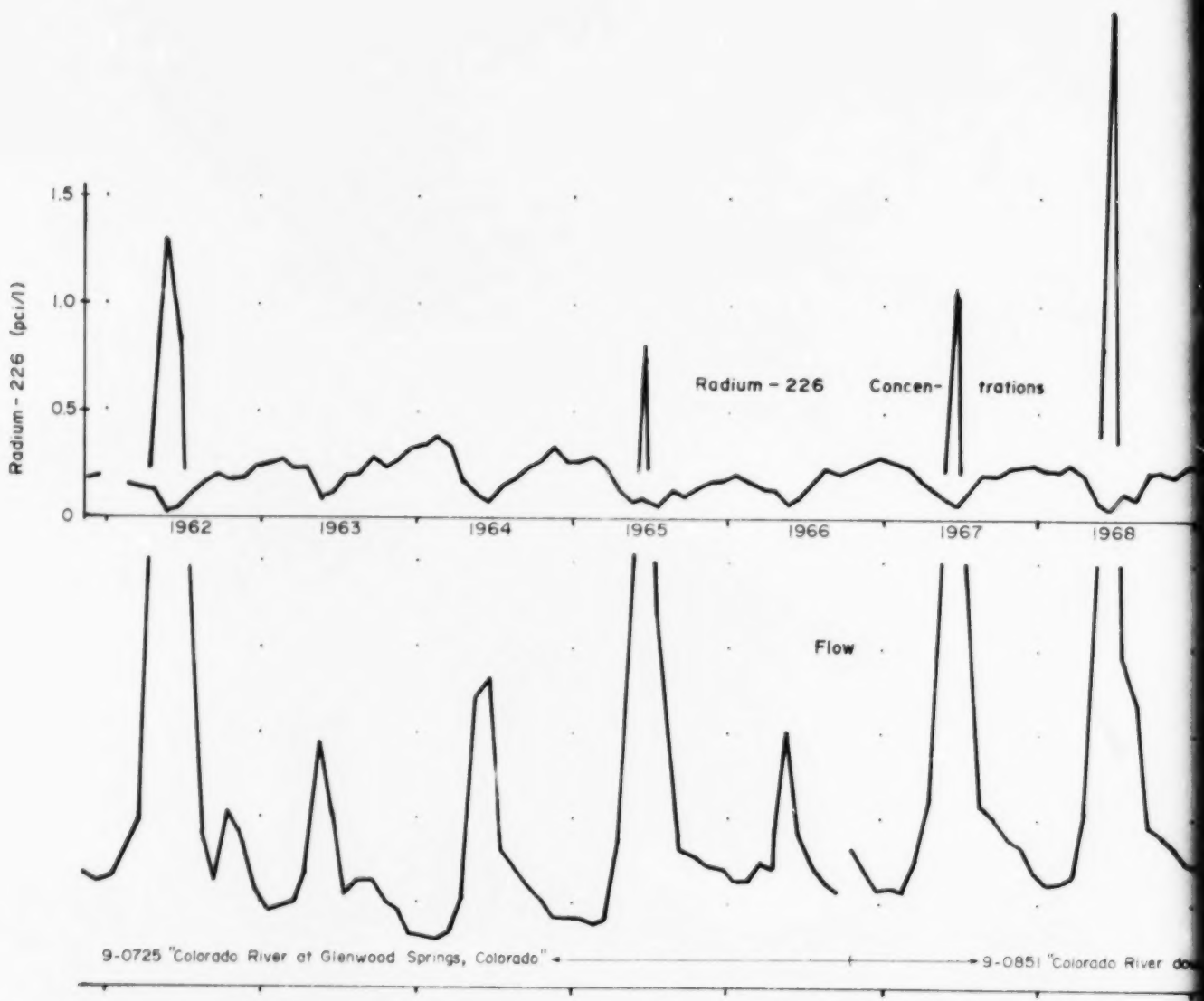
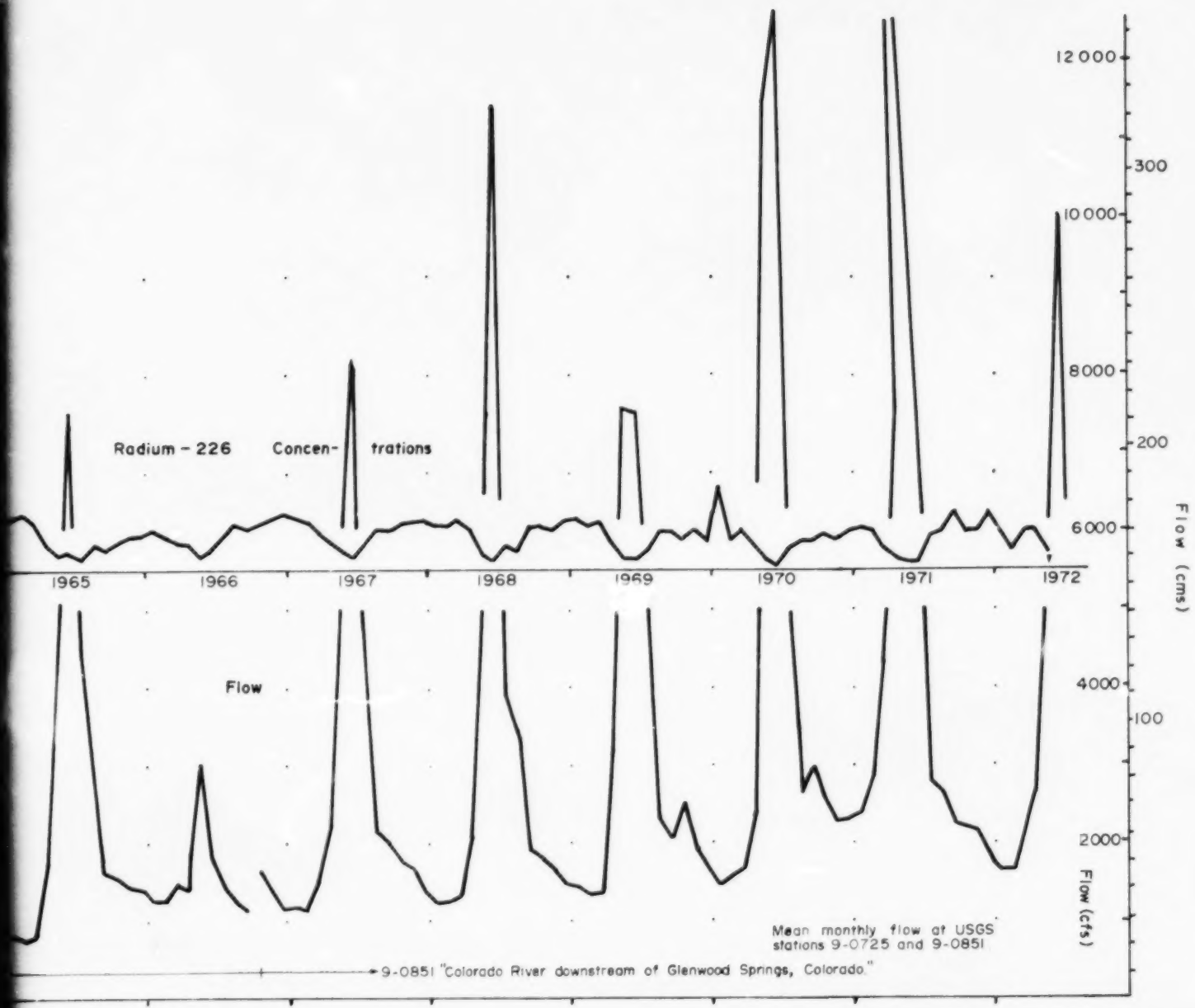


FIGURE 2 RADIUM–226 CONCENTRATIONS (DISSOLVED) AND AVERAGE MONTHLY
(COLORADO RIVER AT SILT, COLORADO) NOV 61–MAY 72



TIONS (DISSOLVED) AND AVERAGE MONTHLY FLOWS FOR STATION RMN–1

LT. COLORADO) NOV 61–MAY 72

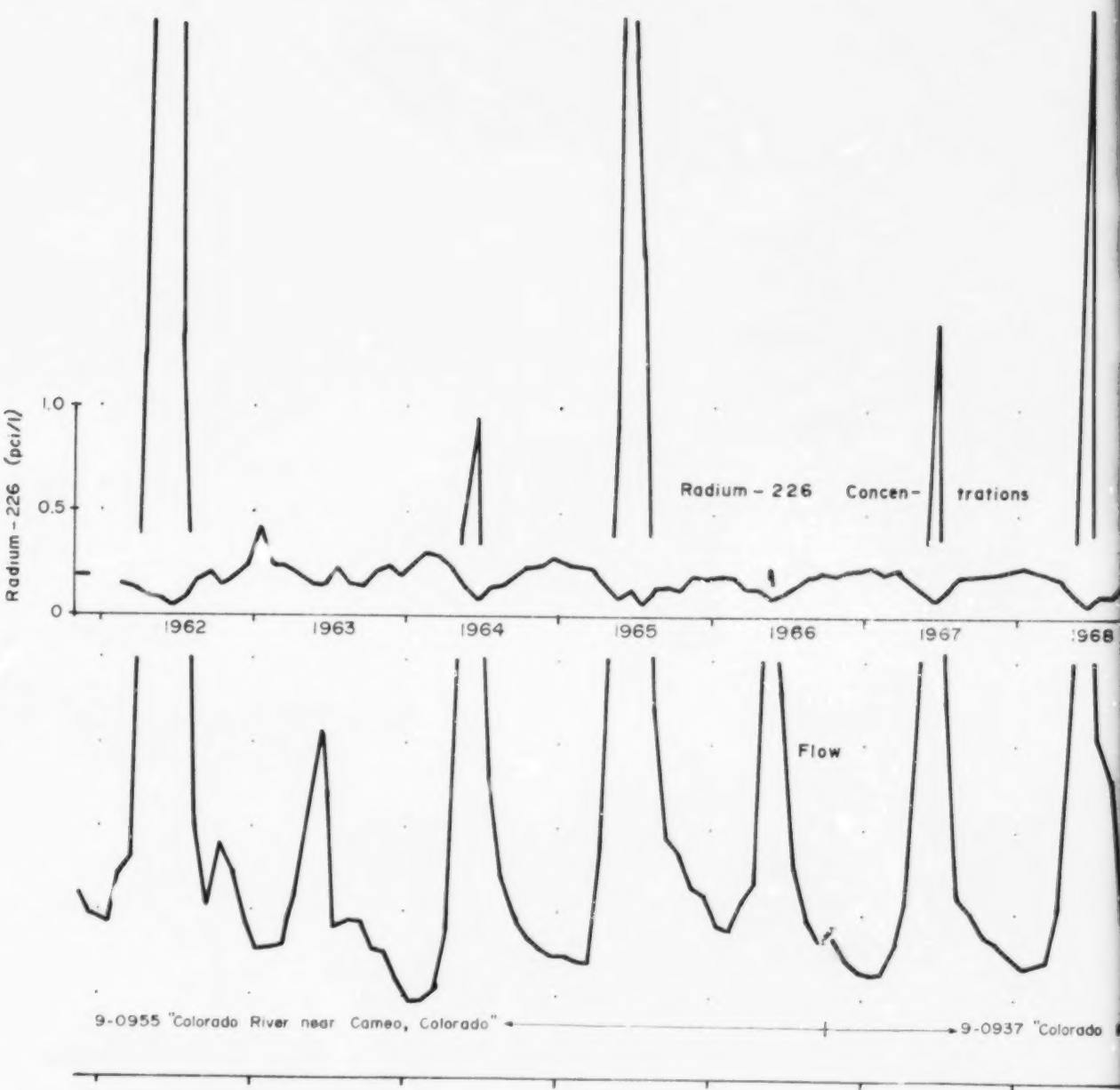
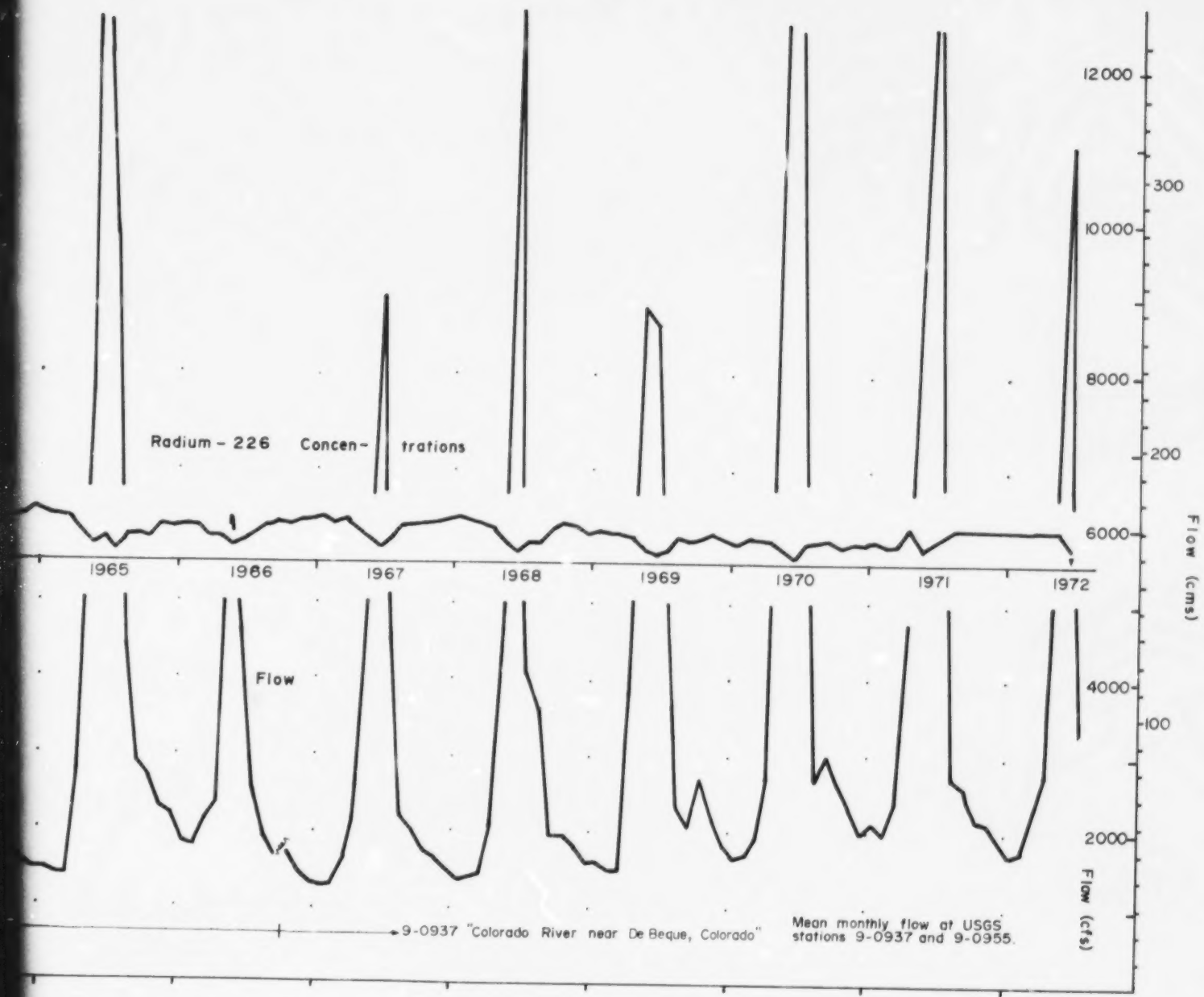


FIGURE 3 RADIUM–226 CONCENTRATIONS (DISSOLVED) AND AVERAGE MONT
(COLORADO RIVER UPSTREAM OF DE BEQUE, COLORADO) NOV 6



RATIONS (DISSOLVED) AND AVERAGE MONTHLY FLOWS FOR STATION RMN–4
STREAM OF DE BEQUE, COLORADO) NOV 61–JUN 72

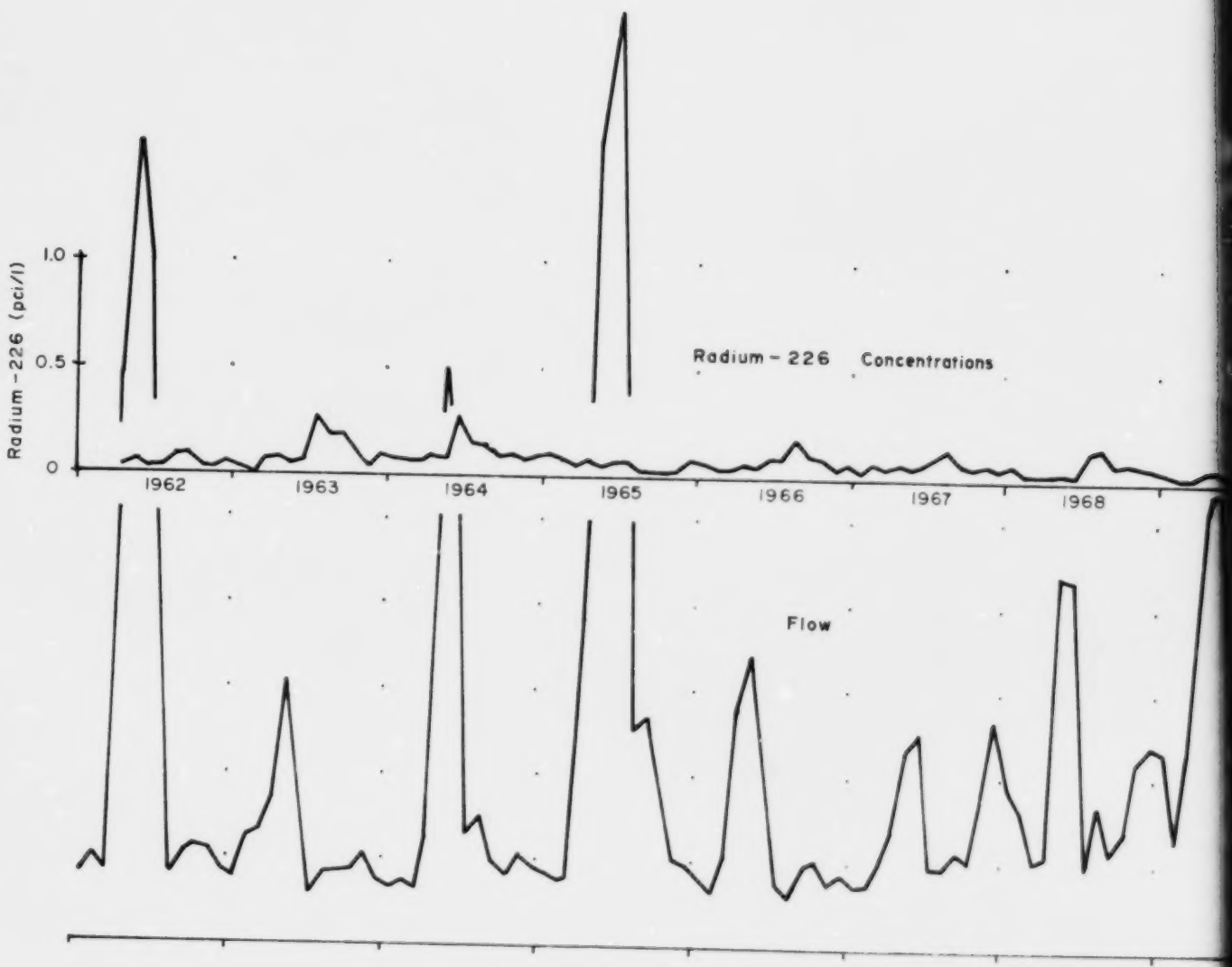
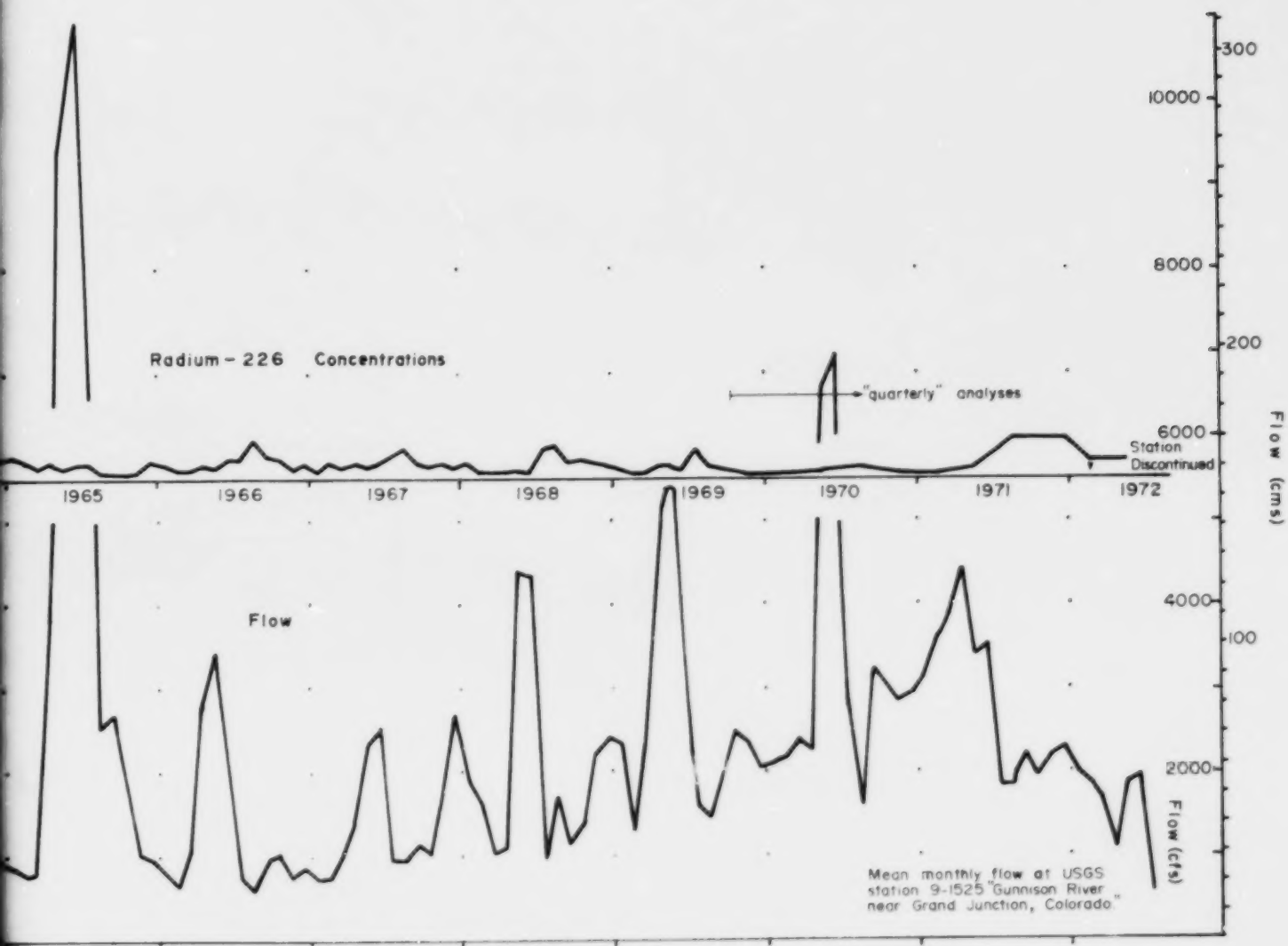


FIGURE 4 RADIUM–226 CONCENTRATIONS (DISSOLVED) AND AVERAGE MONTHLY F
(GUNNISON RIVER AT GRAND JUNCTION, COLORADO) APR 61–MAY 72



RATIONS (DISSOLVED) AND AVERAGE MONTHLY FLOWS FOR STATION RMN–5
GRAND JUNCTION, COLORADO) APR 61–MAY 72

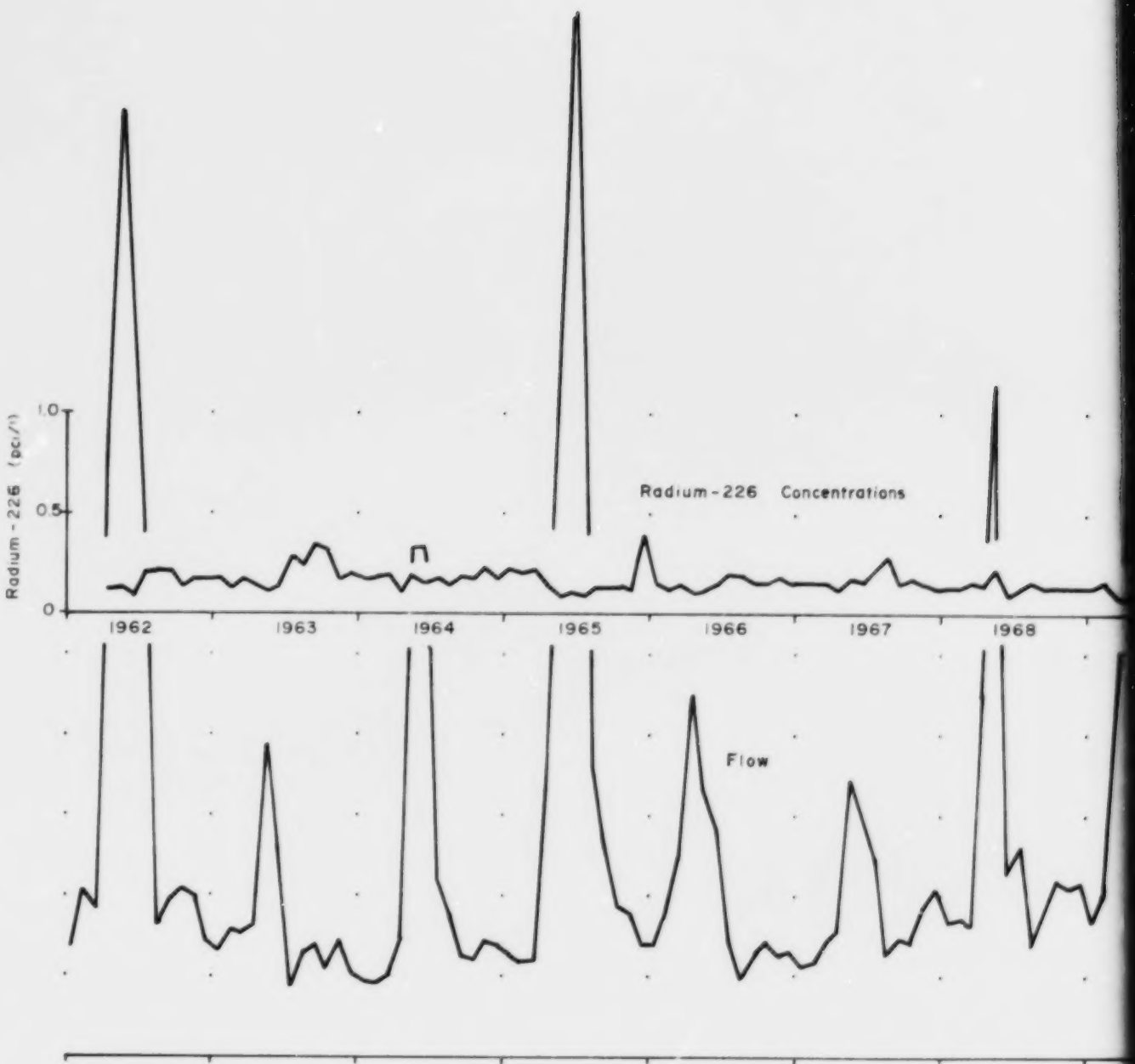
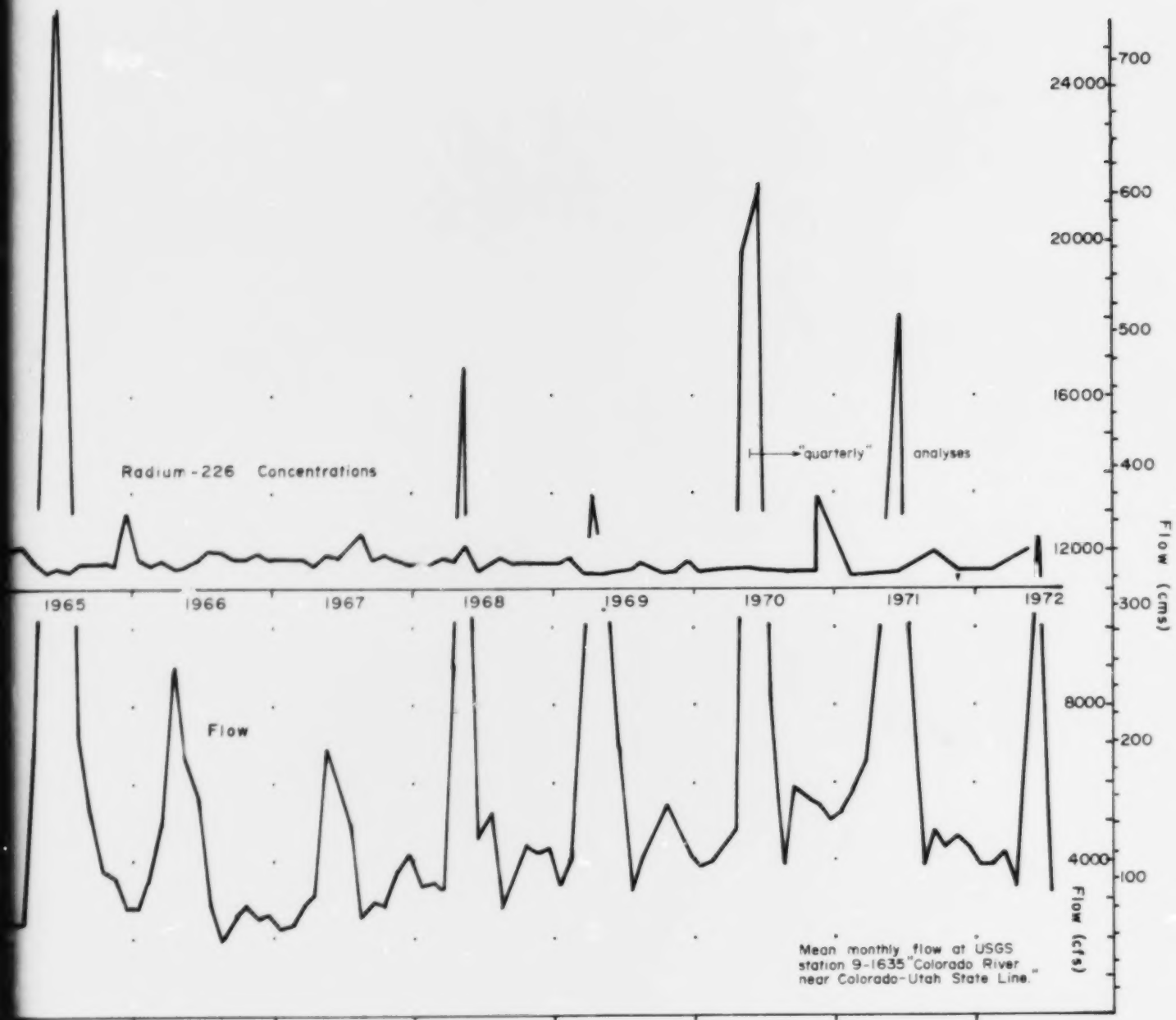


FIGURE 5 RADIUM–226 CONCENTRATIONS (DISSOLVED) AND AVERAGE MONTHLY (COLORADO RIVER NEAR FRUITA, COLORADO) APRIL 61–MAY 72



ATIONS (DISSOLVED) AND AVERAGE MONTHLY FLOWS FOR STATION RMN-6
R FRUITA, COLORADO) APRIL 61-MAY 72

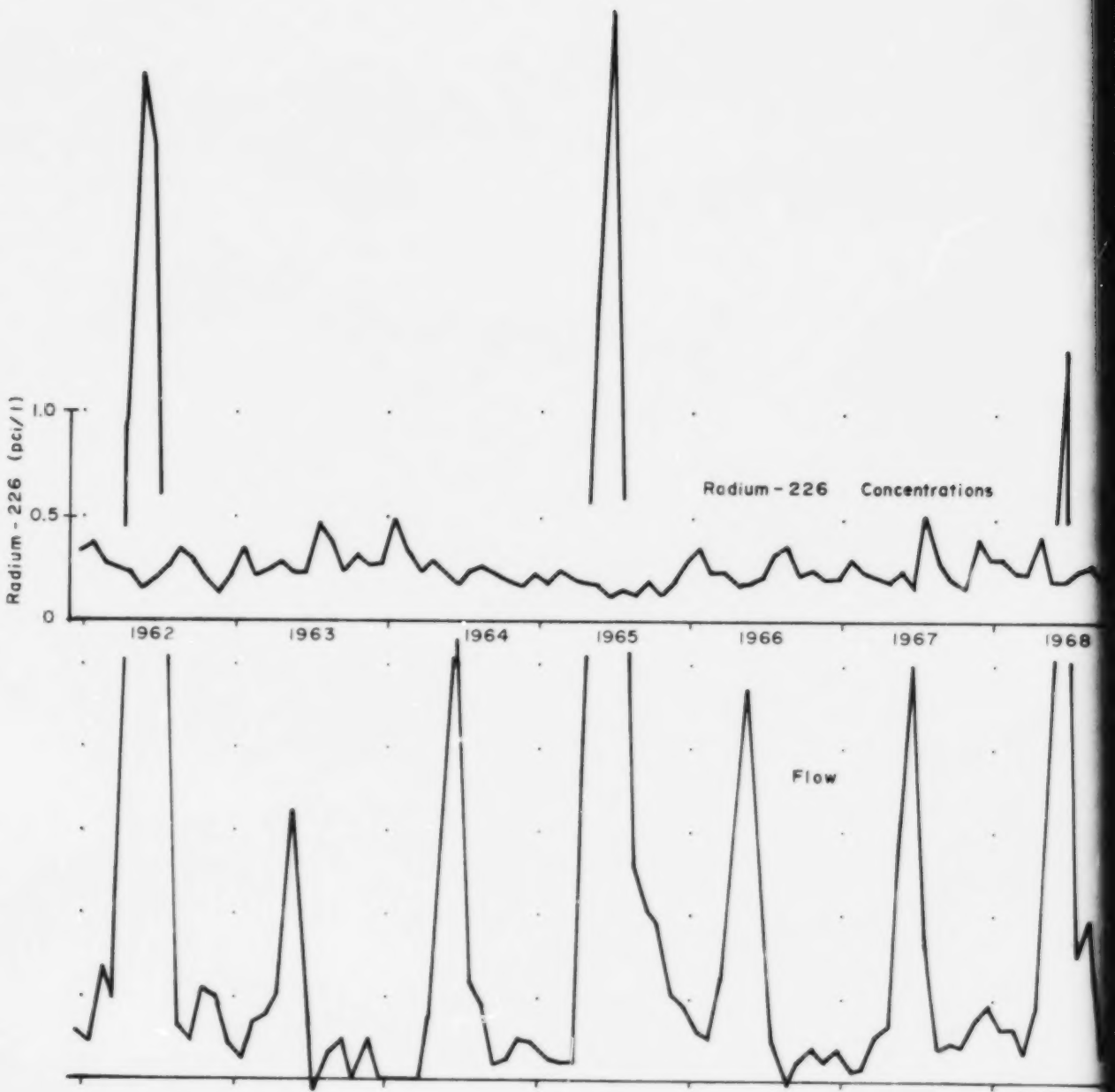
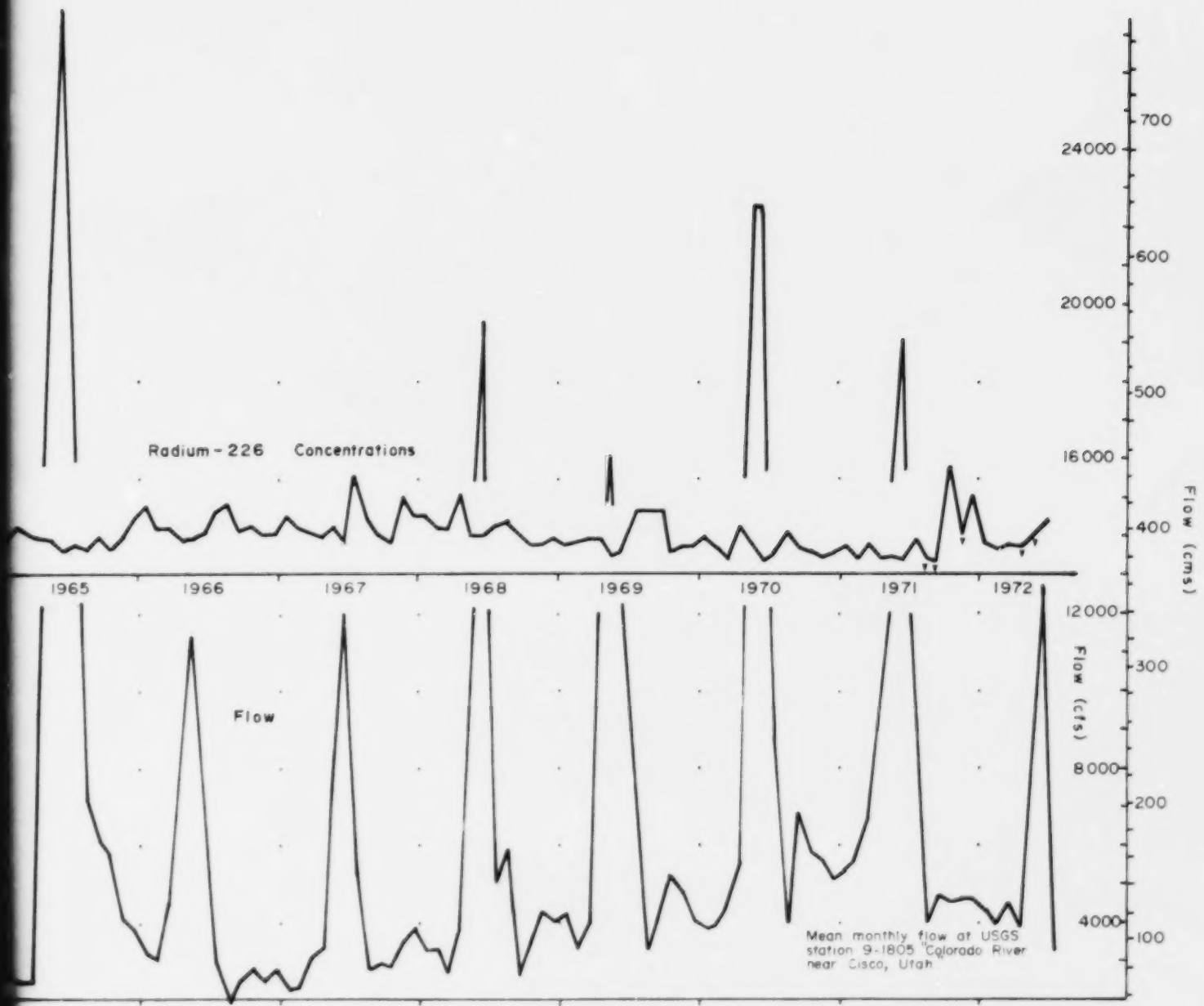


FIGURE 6 RADIUM CONCENTRATIONS (DISSOLVED) AND AVERAGE MONTHLY FL (COLORADO RIVER NORTH OF MOAB, UTAH) DEC 61–JUN 72



(DISSOLVED) AND AVERAGE MONTHLY FLOWS FOR STATION RMN-9
OF MOAB, UTAH) DEC 61-JUN 72

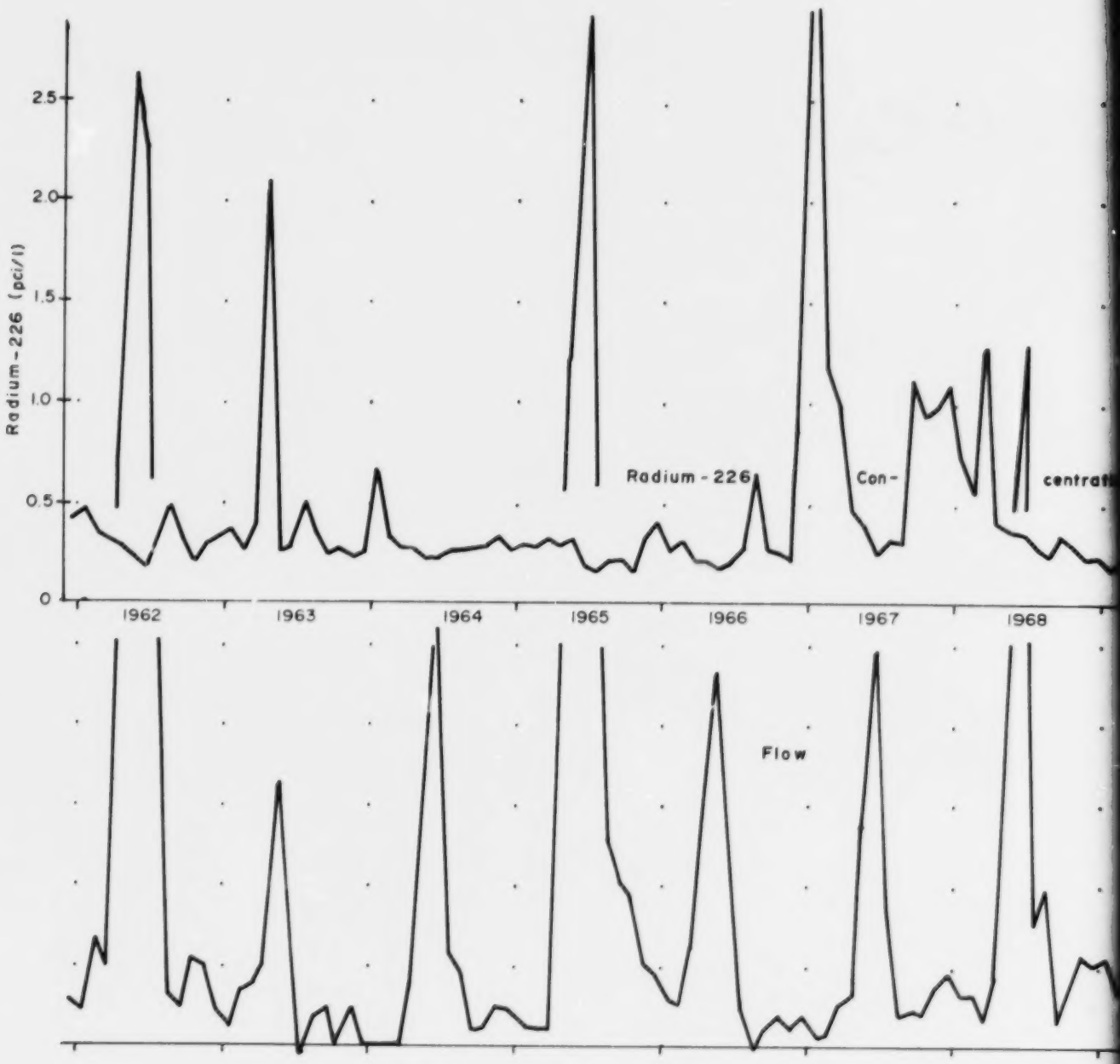
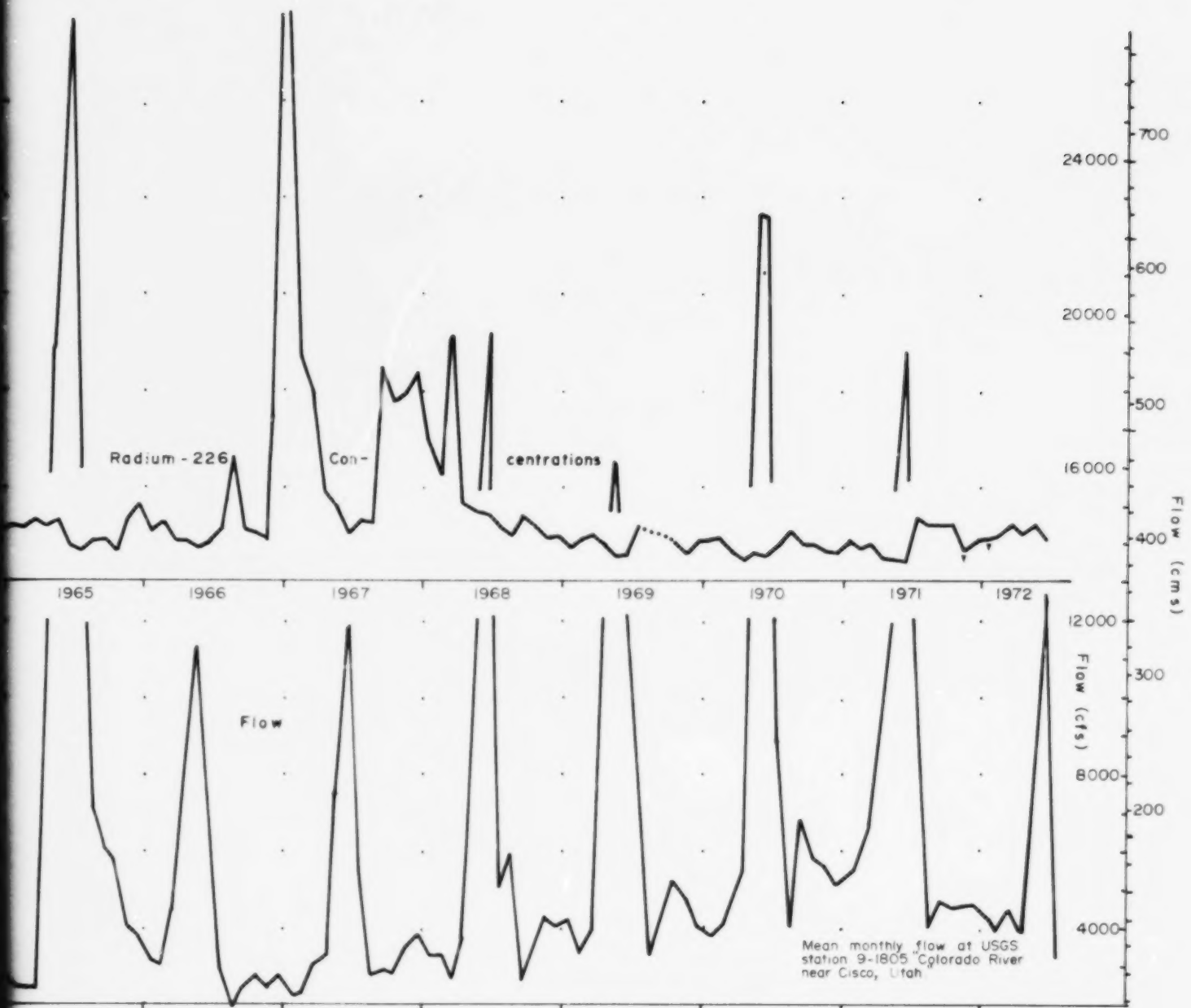


FIGURE 7 RADIUM–226 CONCENTRATIONS (DISSOLVED) AND AVERAGE MONTHL (COLORADO RIVER NEAR MOAB. UTAH) DEC 61–MAY 72



RATIONS (DISSOLVED) AND AVERAGE MONTHLY FLOWS FOR STATION RMN-10

R MOAB. UTAH) DEC 61-MAY 72

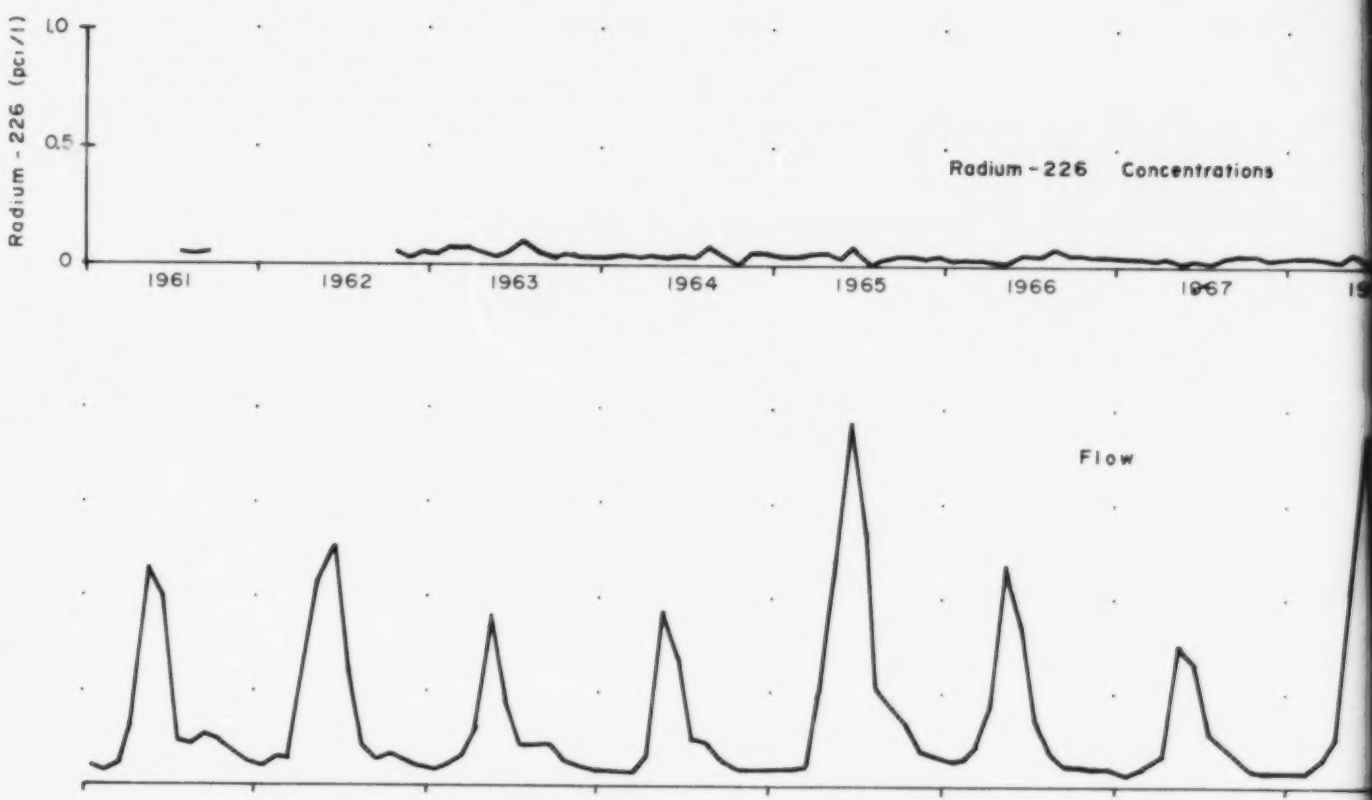
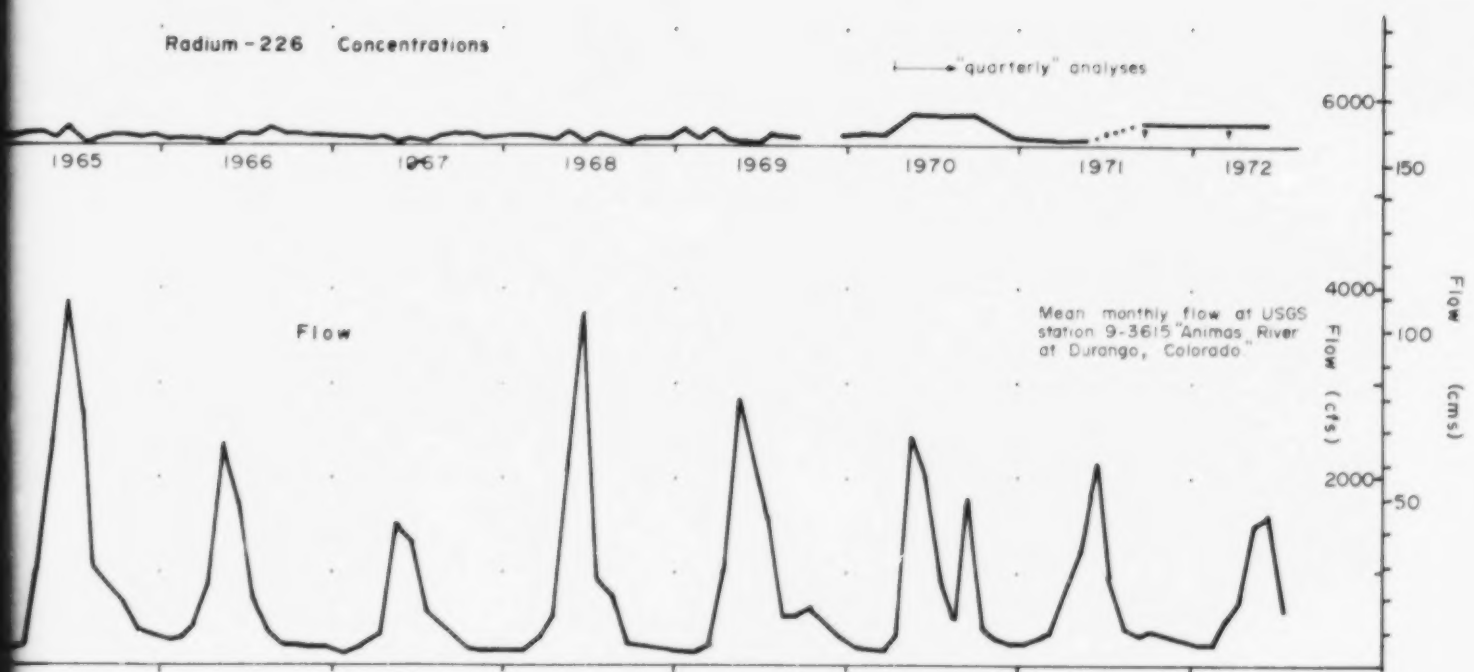


FIGURE 8 RADIUM–226 CONCENTRATIONS (DISSOLVED) AND AVERAGE MONTHLY F
(ANIMAS RIVER AT DURANGO, COLORADO) JUL 61—JUL 72



SSOLVED) AND AVERAGE MONTHLY FLOWS FOR STATION RMN-11

LORADO) JUL 61—JUL 72

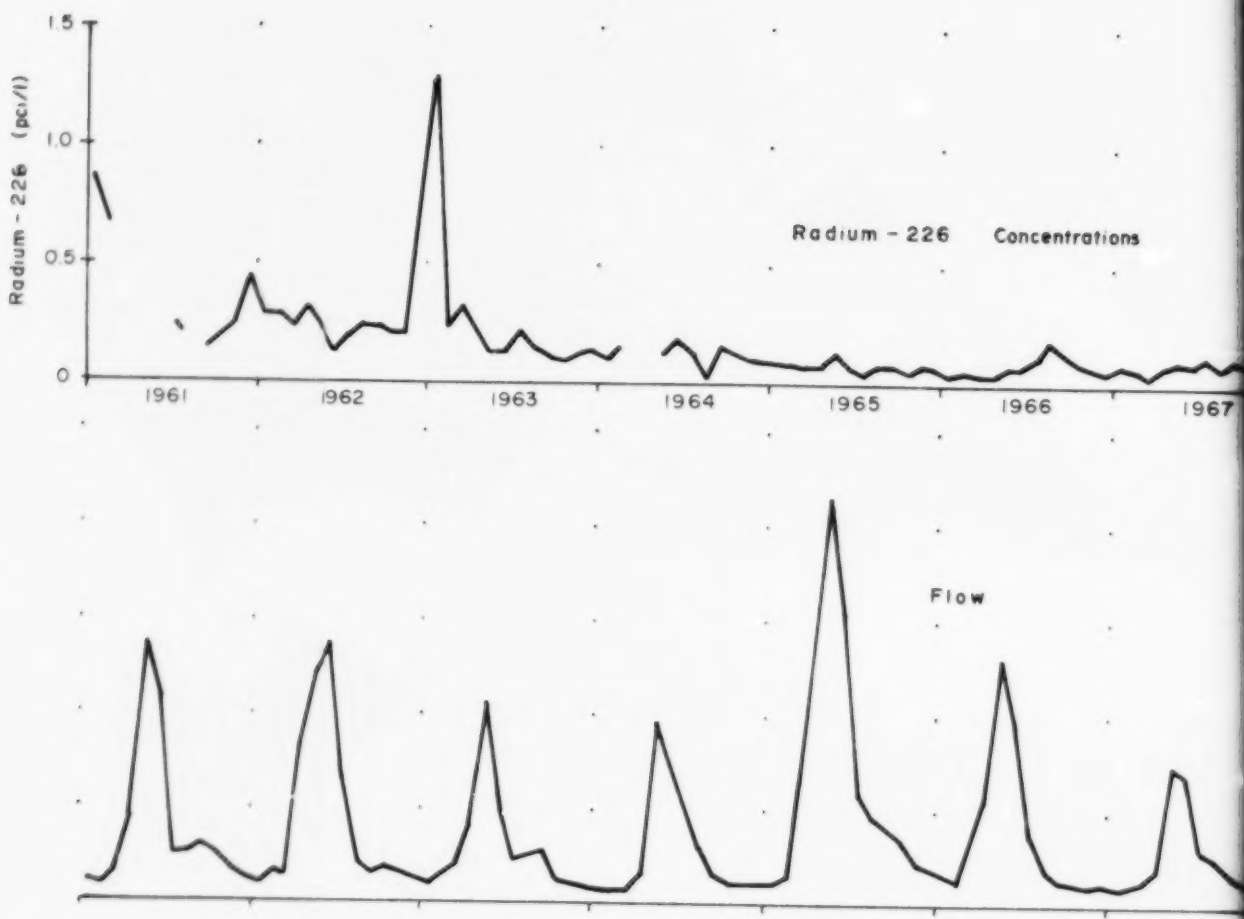
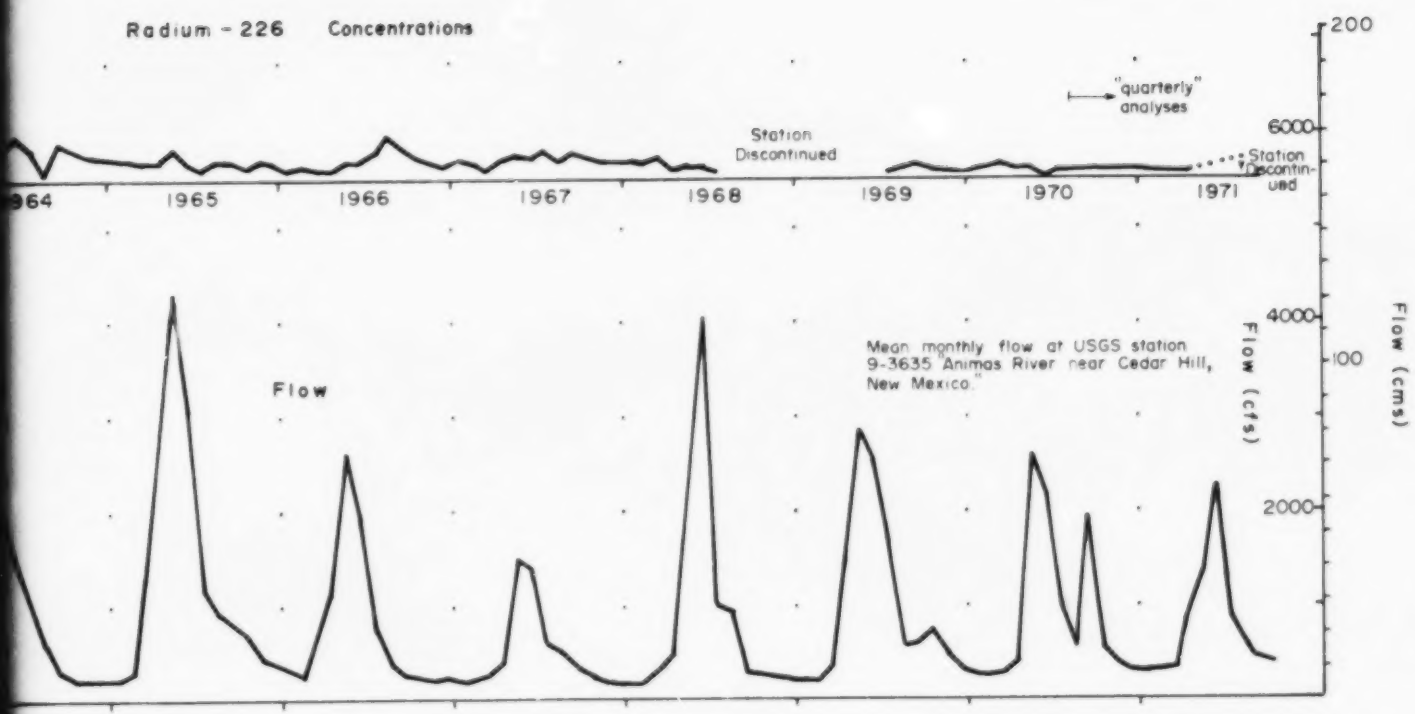


FIGURE 9 RADIUM–226 CONCENTRATIONS (DISSOLVED) AND AVERAGE MONT
(ANIMAS RIVER NEAR CEDAR HILL, NEW MEXICO) JAN 61–AUG



ONS (DISSOLVED) AND AVERAGE MONTHLY FLOWS FOR STATION RMN–12

AR HILL. NEW MEXICO) JAN 61–AUG 71

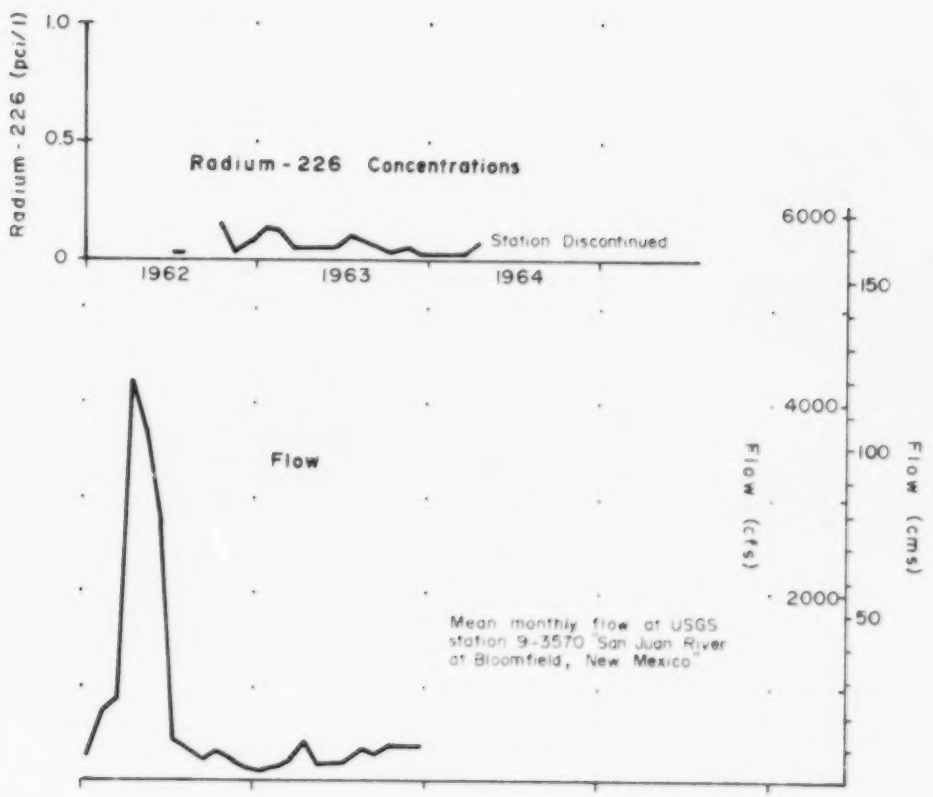
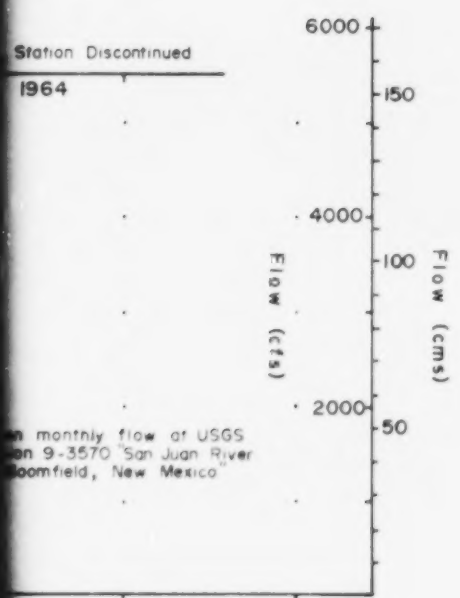


FIGURE 10 RADIUM–226 CONCENTRATIONS (DISSOLVED) AND AVERAGE M
(SAN JUAN RIVER UPSTREAM OF FARMINGTON, NEW MEXICO

ons



ONCENTRATIONS (DISSOLVED) AND AVERAGE MONTHLY FLOWS FOR STATION RMN–13
ER UPSTREAM OF FARMINGTON. NEW MEXICO) JUL 62–APR 64

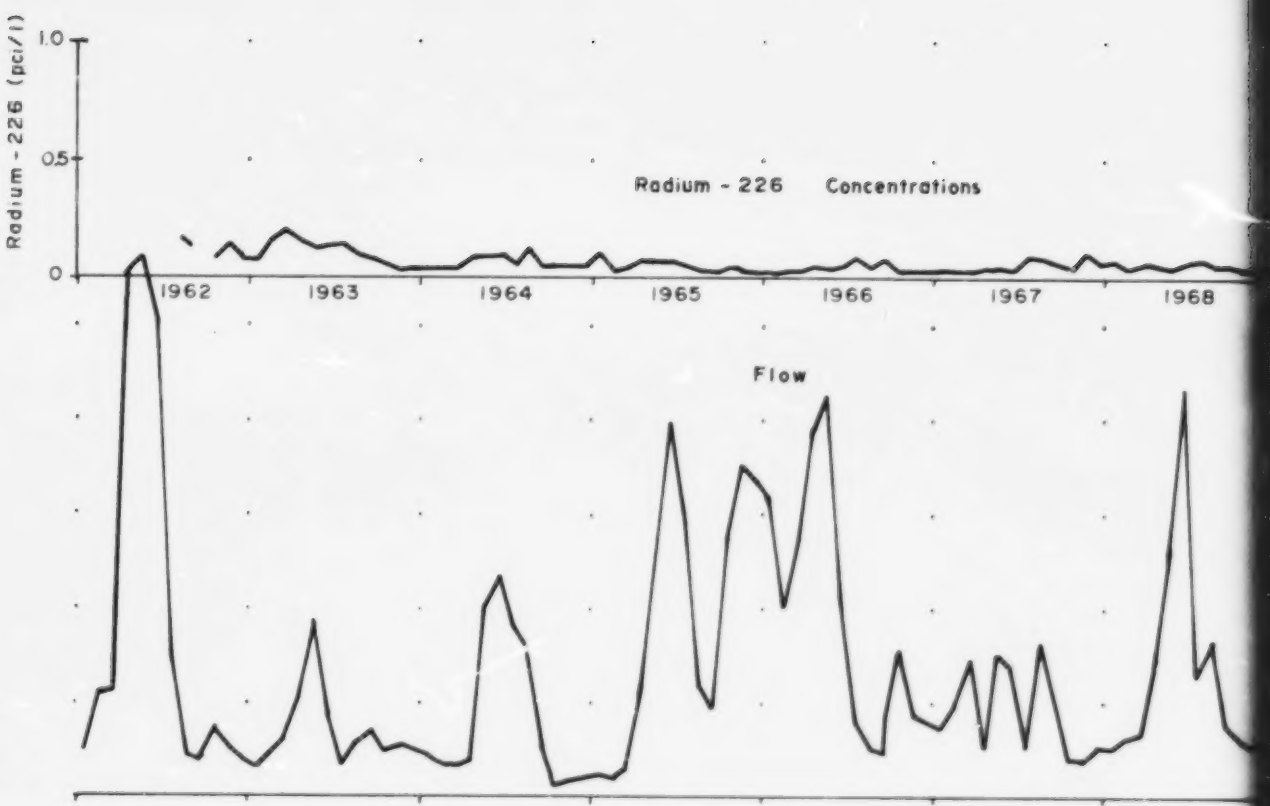
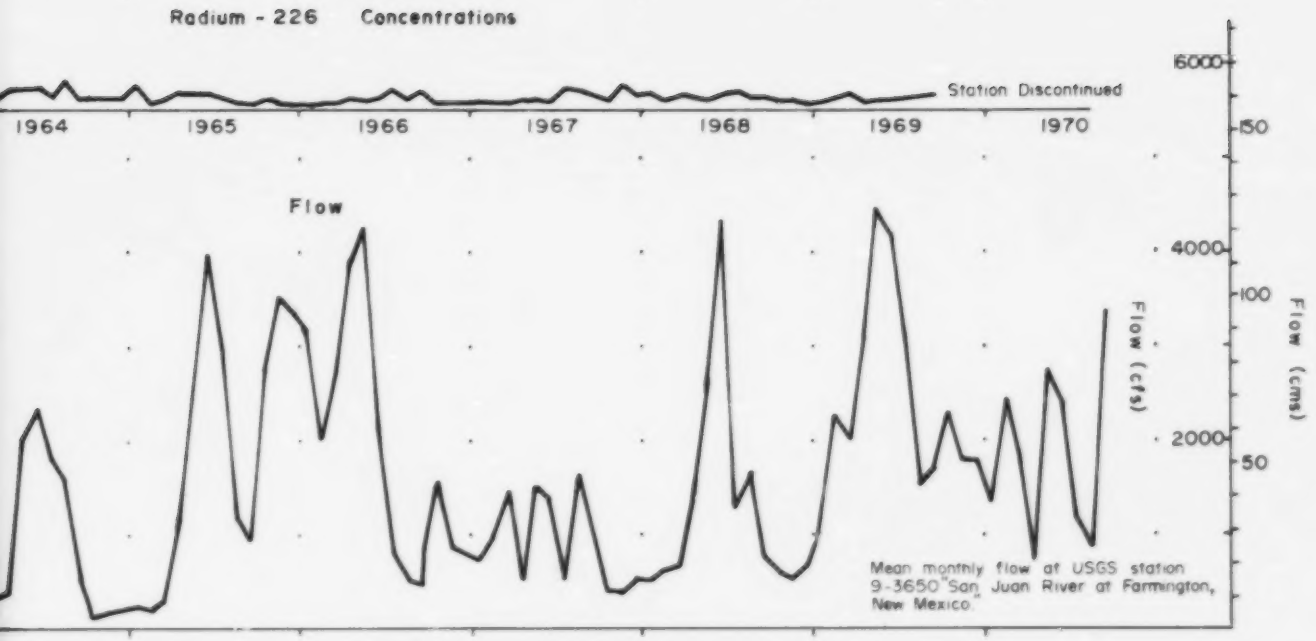


FIGURE 11 RADIUM–226 CONCENTRATIONS (DISSOLVED) AND AVERAGE MONTHLY
(SAN JUAN RIVER NEAR FRUITLAND, NEW MEXICO) AUG 62–SEP 6



CENTRATIONS (DISSOLVED) AND AVERAGE MONTHLY FLOWS FOR STATION RMN–14 NEAR FRUITLAND, NEW MEXICO) AUG 62–SEP 69

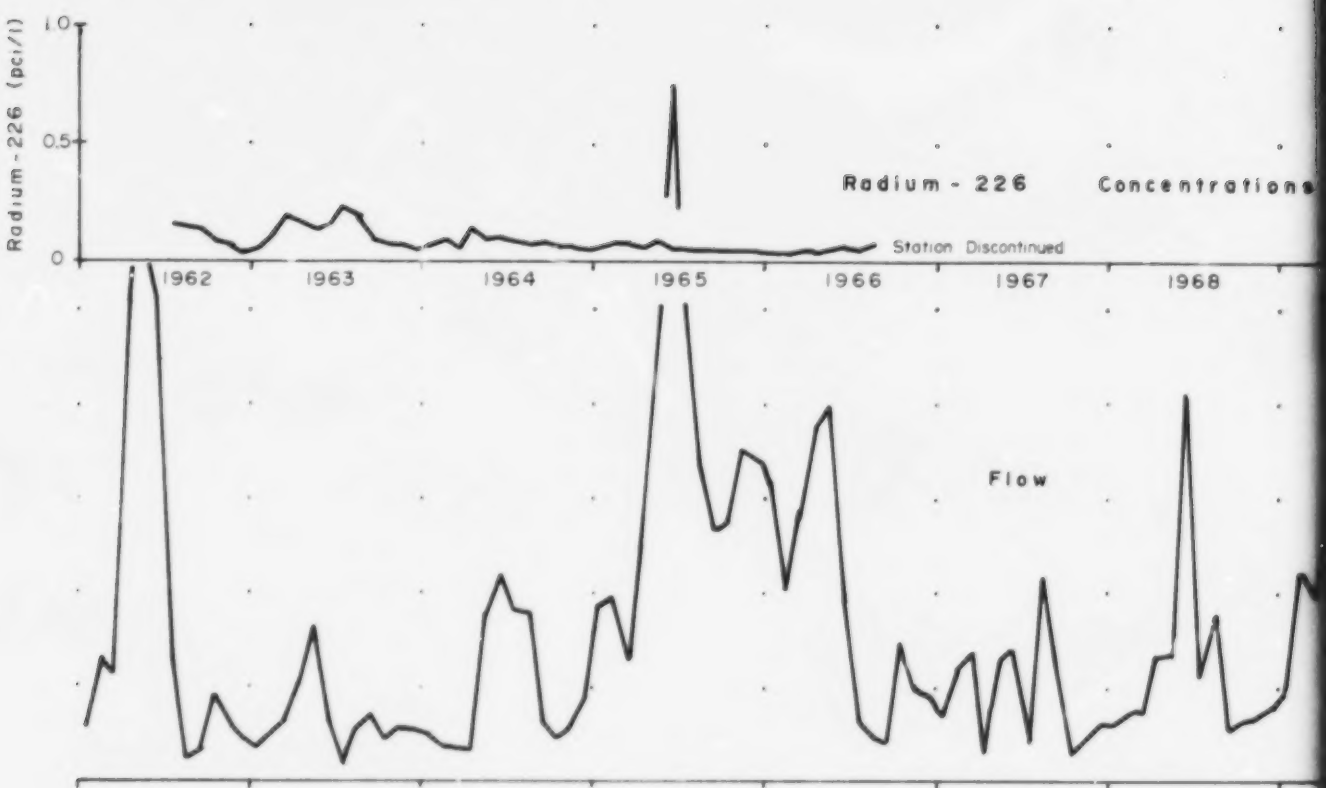
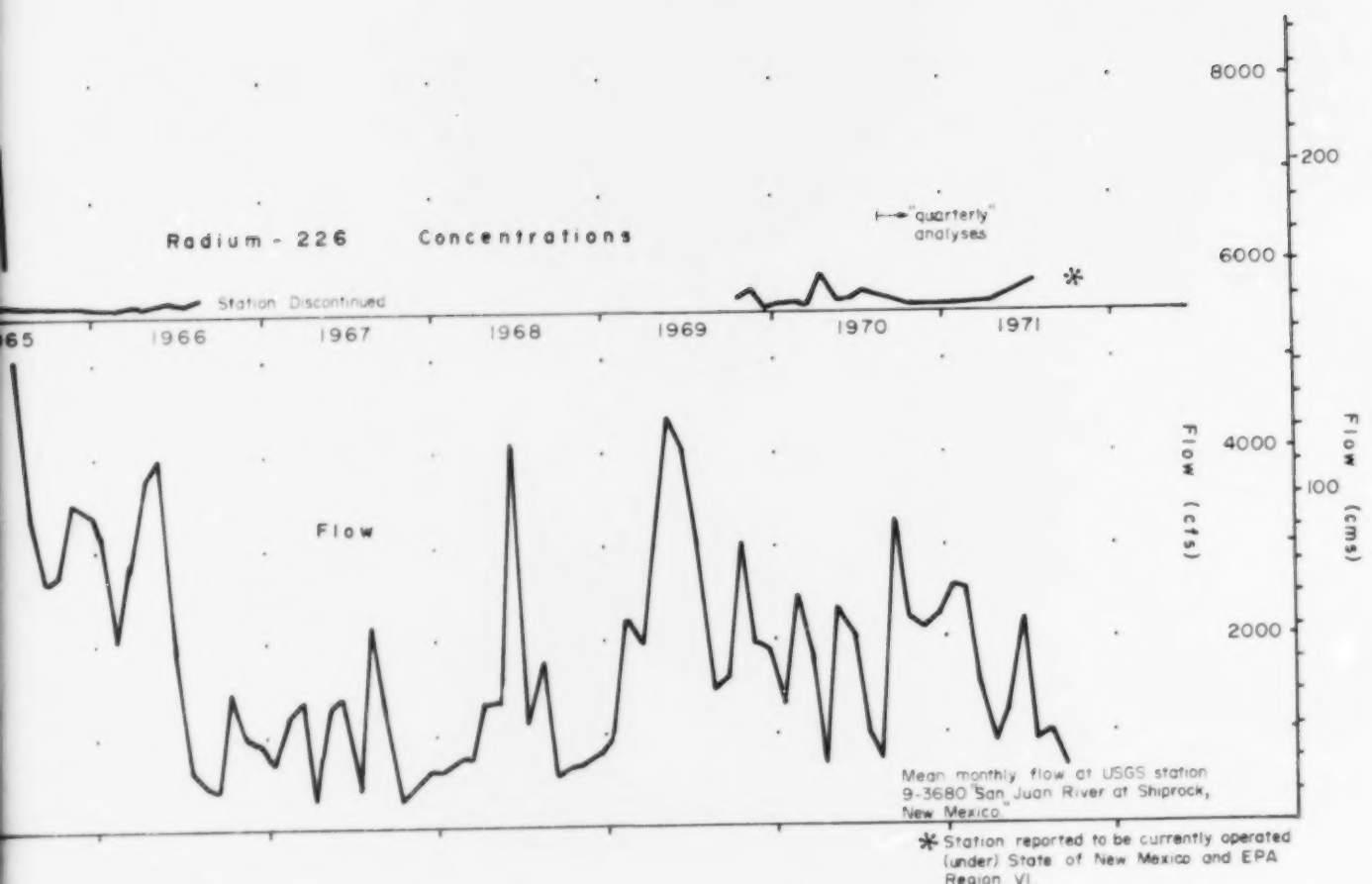


FIGURE 12 RADIUM–226 CONCENTRATIONS (DISSOLVED) AND AVERAGE MONTHL
(SAN JUAN RIVER DOWNSTREAM OF SHIPROCK, NEW MEXICO) JUL



TIONS (DISSOLVED) AND AVERAGE MONTHLY FLOWS FOR STATION RMN–14S

STREAM OF SHIPROCK, NEW MEXICO) JUL 62–JUL 71

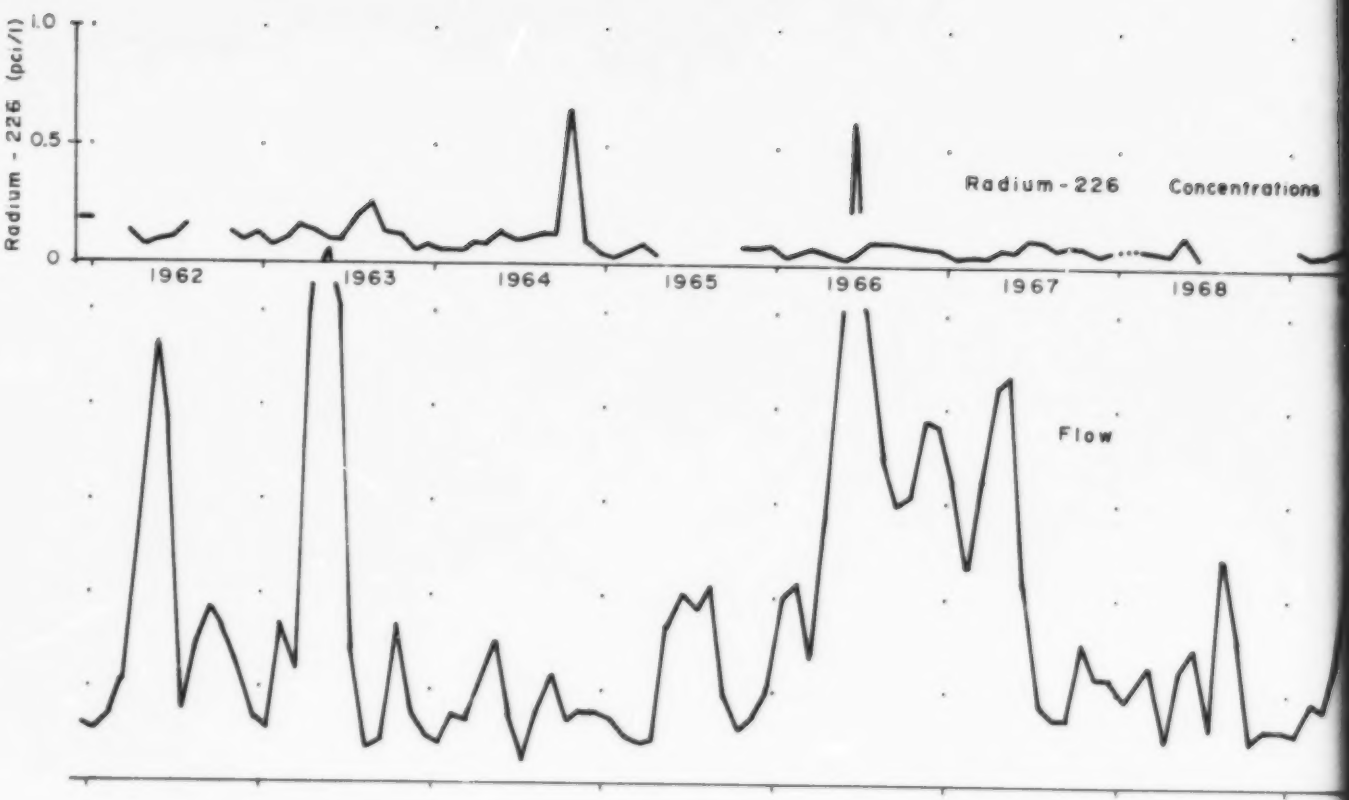
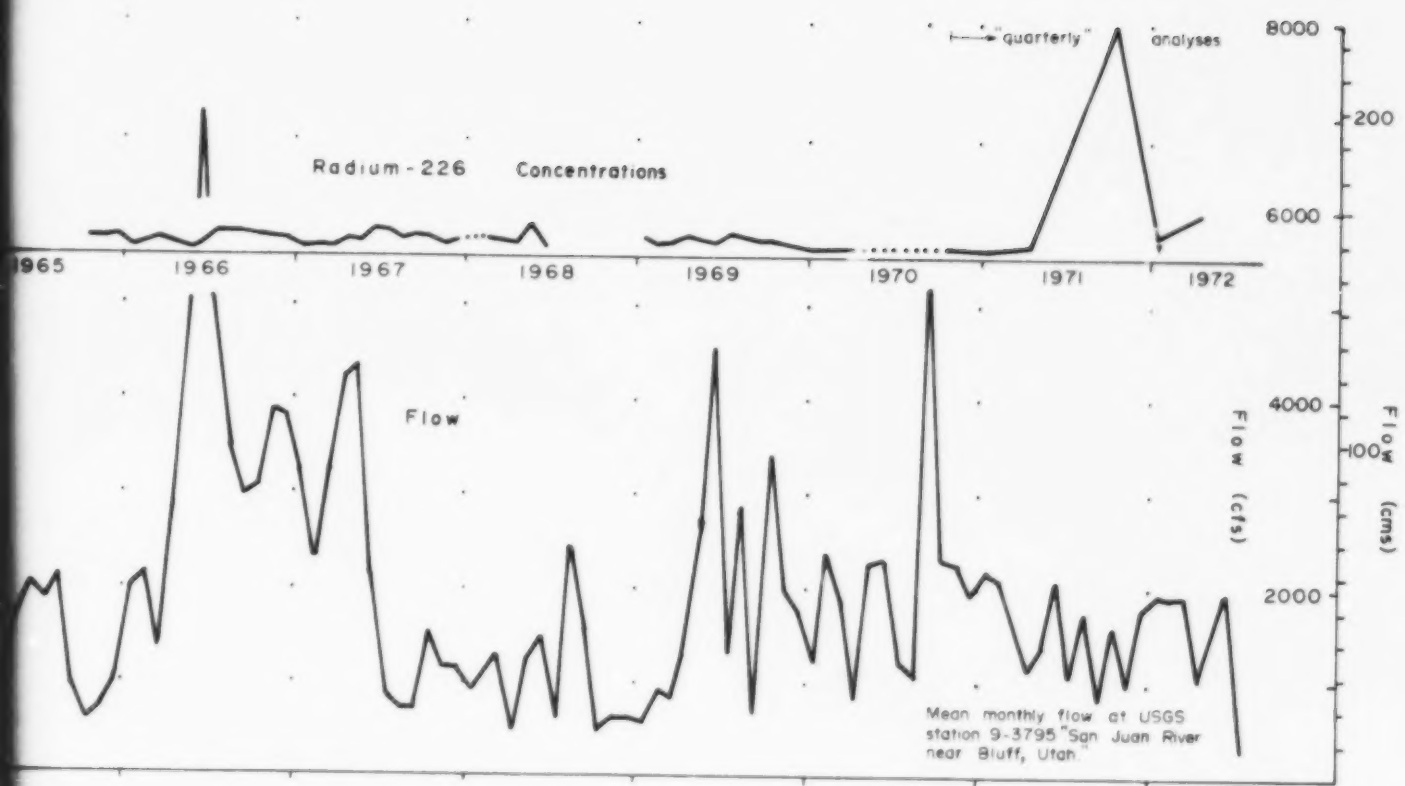


FIGURE 13 RADIUM–226 CONCENTRATIONS (DISSOLVED) AND AVERAGE MONTHLY FLO
(SAN JUAN RIVER UPSTREAM OF MEXICAN HAT, UTAH) DEC 61–APR 72



(DISSOLVED) AND AVERAGE MONTHLY FLOWS FOR STATION RMN-15
OF MEXICAN HAT, UTAH) DEC 61-APR 72

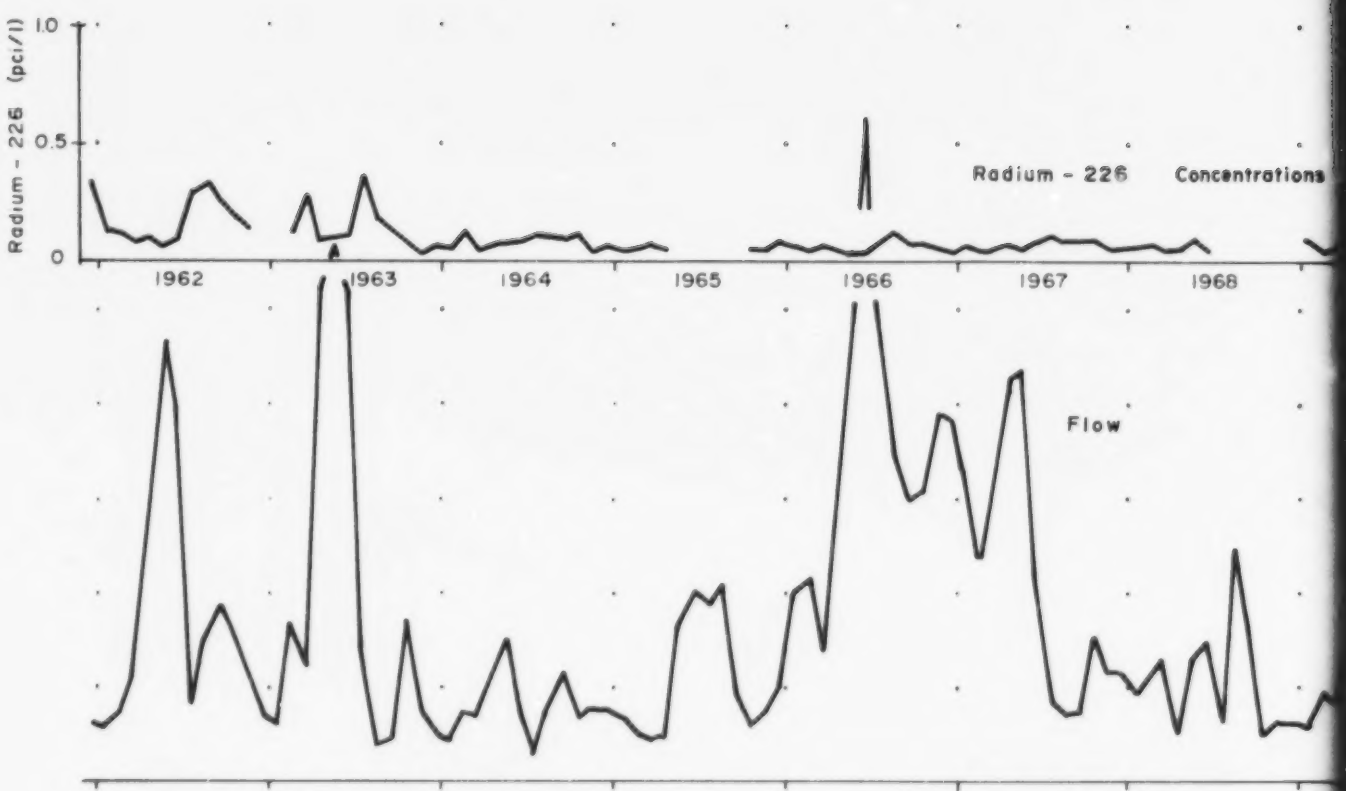
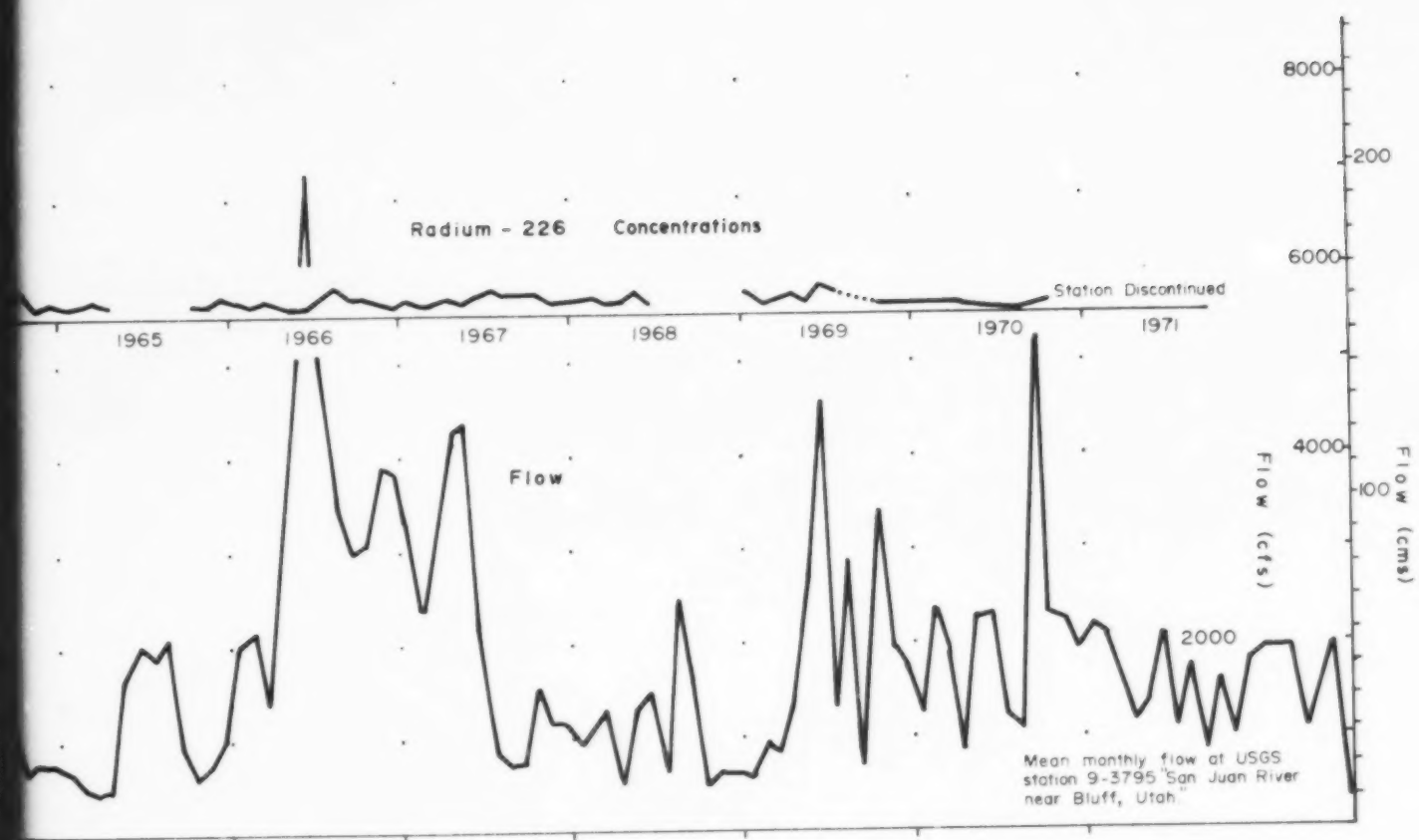


FIGURE 14 RADIUM-226 CONCENTRATIONS (DISSOLVED) AND AVERAGE MONTHLY
(SAN JUAN RIVER DOWNSTREAM OF MEXICAN HAT, UTAH) DEC 61-OC



TRATIONS (DISSOLVED) AND AVERAGE MONTHLY FLOWS FOR STATION RMN-16
OWNSTREAM OF MEXICAN HAT, UTAH) DEC 61-OCT 70

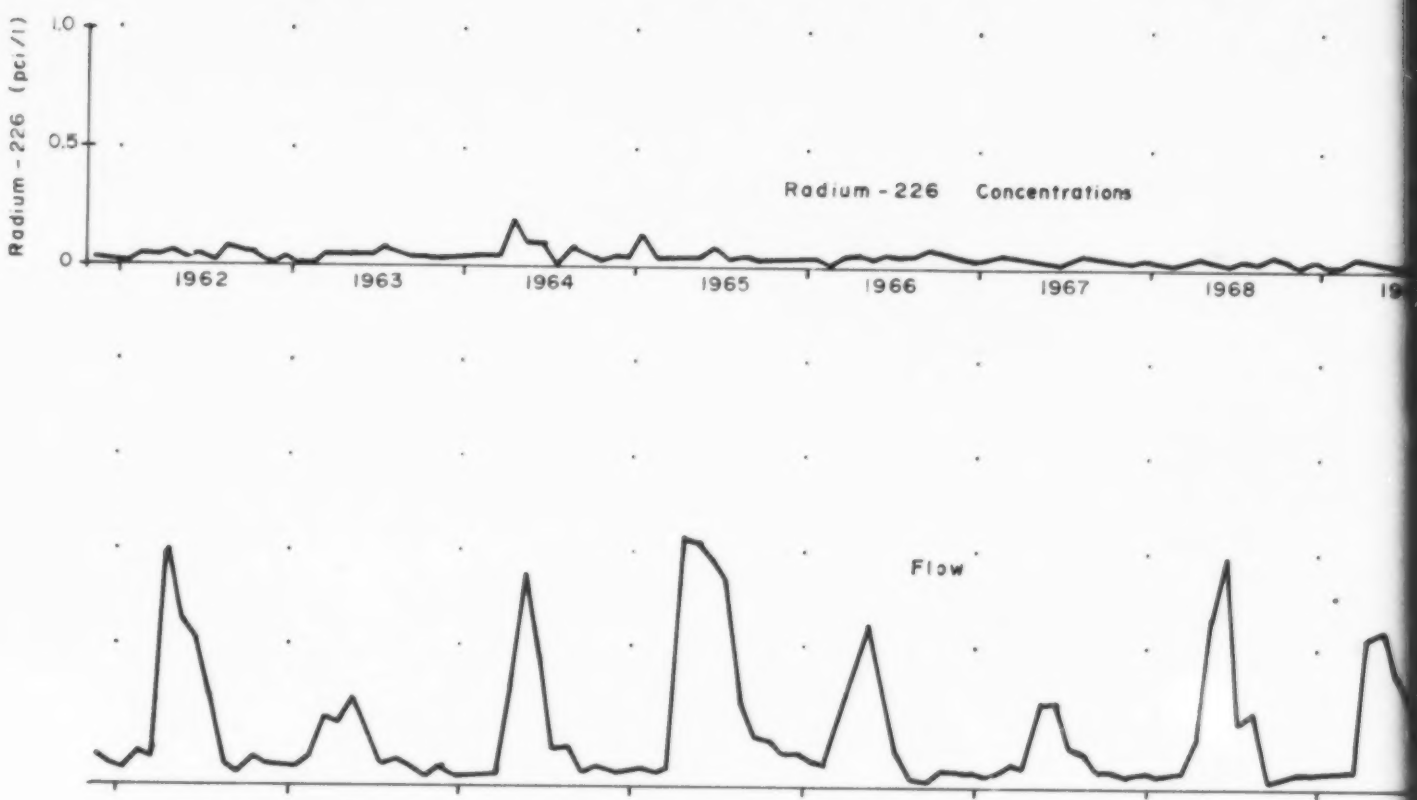
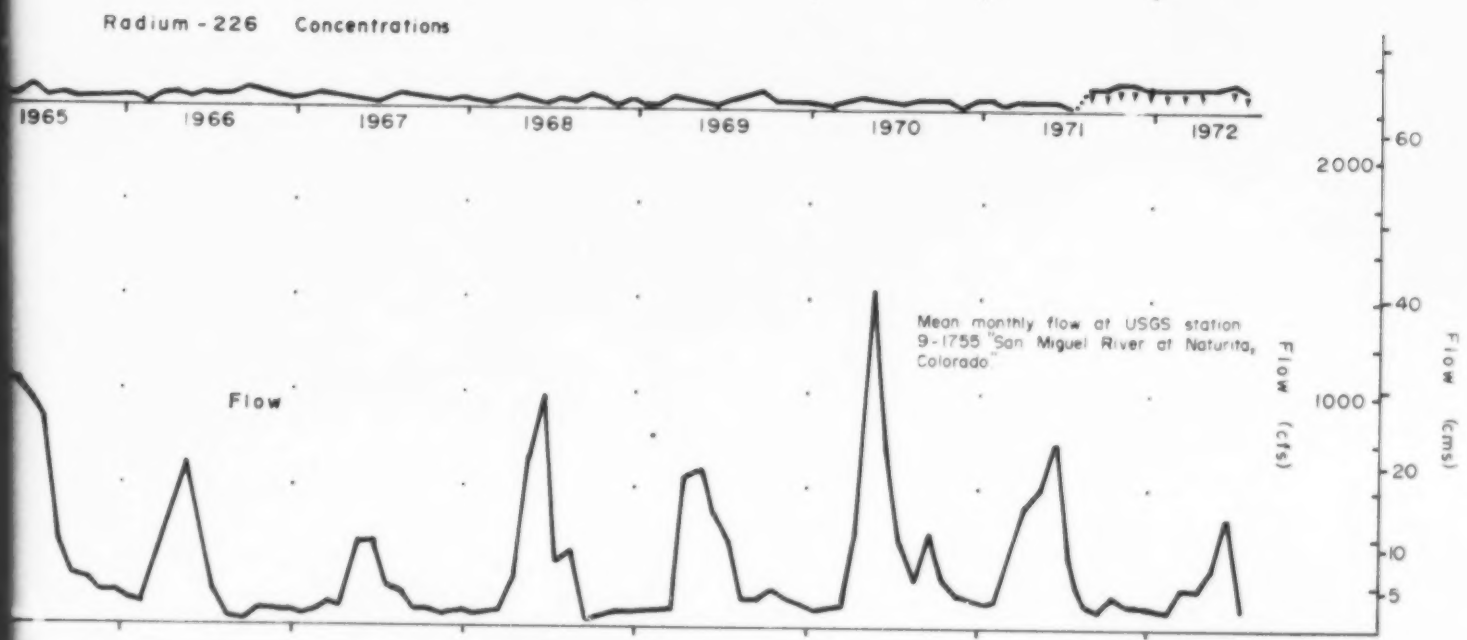


FIGURE 15 RADIUM–226 CONCENTRATIONS (DISSOLVED) AND AVERAGE MONTHLY FL
(SAN MIGUEL RIVER AT NATURITA, COLORADO) OCT 61–JUL 72



ONS (DISSOLVED) AND AVERAGE MONTHLY FLOWS FOR STATION RMN–17
ATURITA, COLORADO) OCT 61–JUL 72

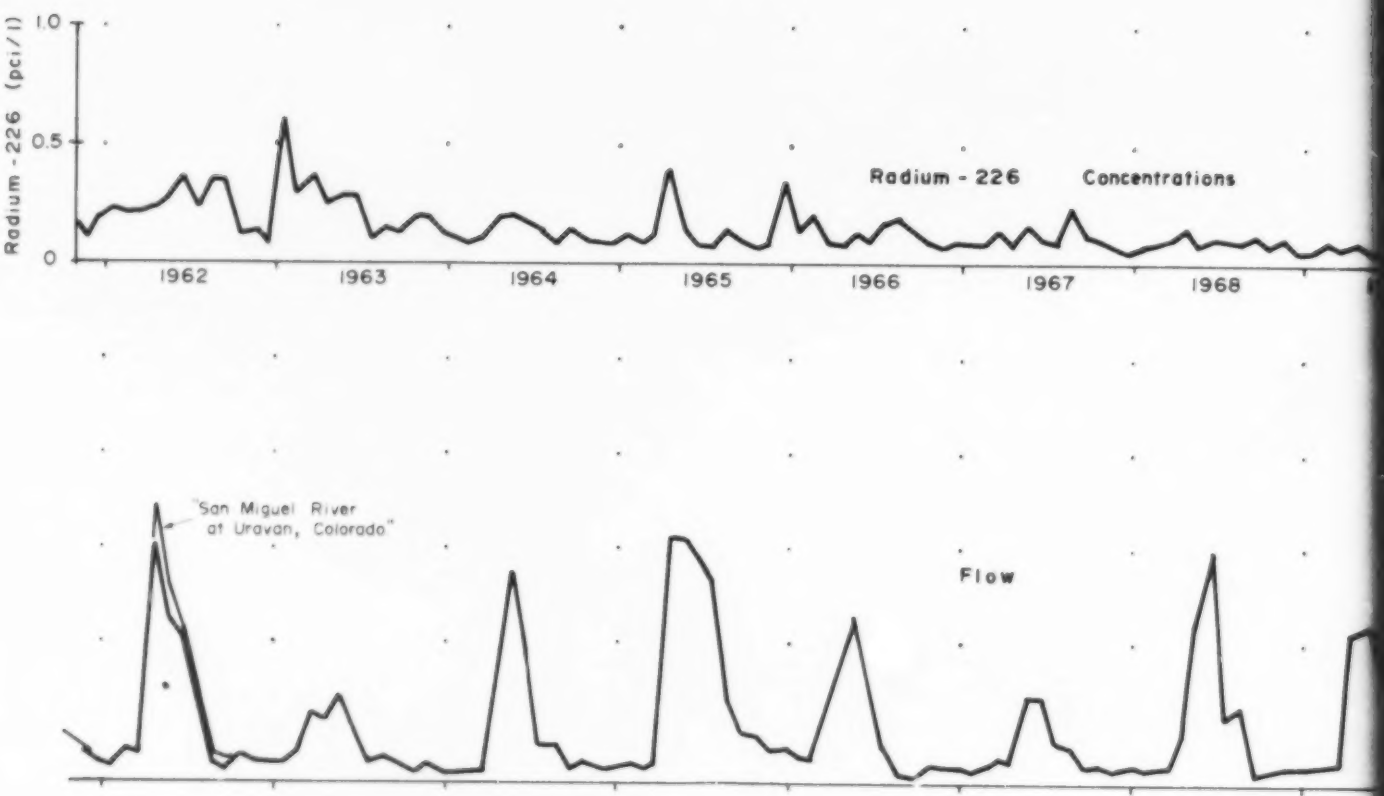
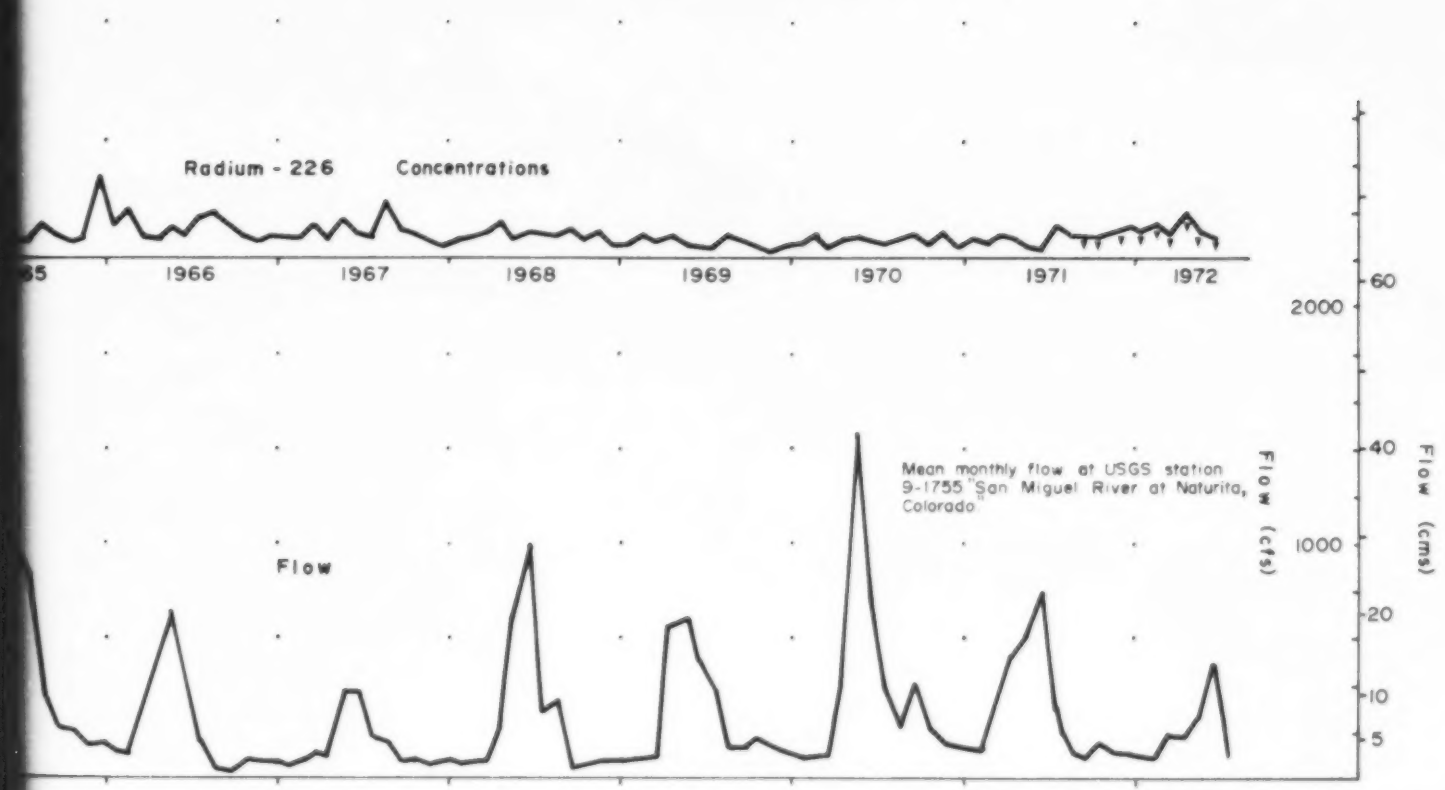


FIGURE 16 RADIUM–226 CONCENTRATIONS (DISSOLVED) AND AVERAGE MONTHLY FL
(SAN MIGUEL RIVER UPSTREAM OF URAVAN, COLORADO) OCT 61–JUN 7



S (DISSOLVED) AND AVERAGE MONTHLY FLOWS FOR STATION RMN–18
M OF URAVAN, COLORADO) OCT 61–JUN 72

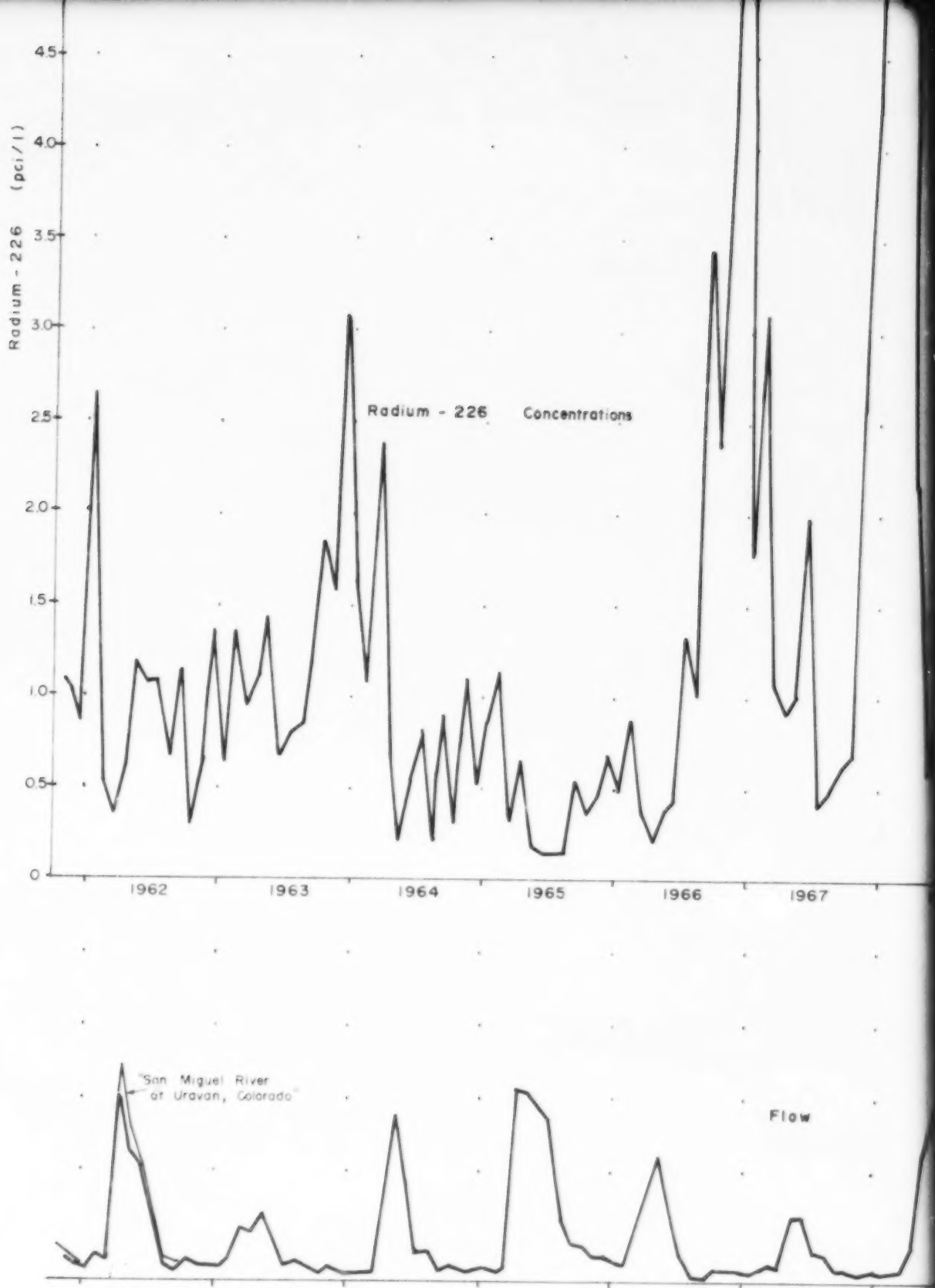
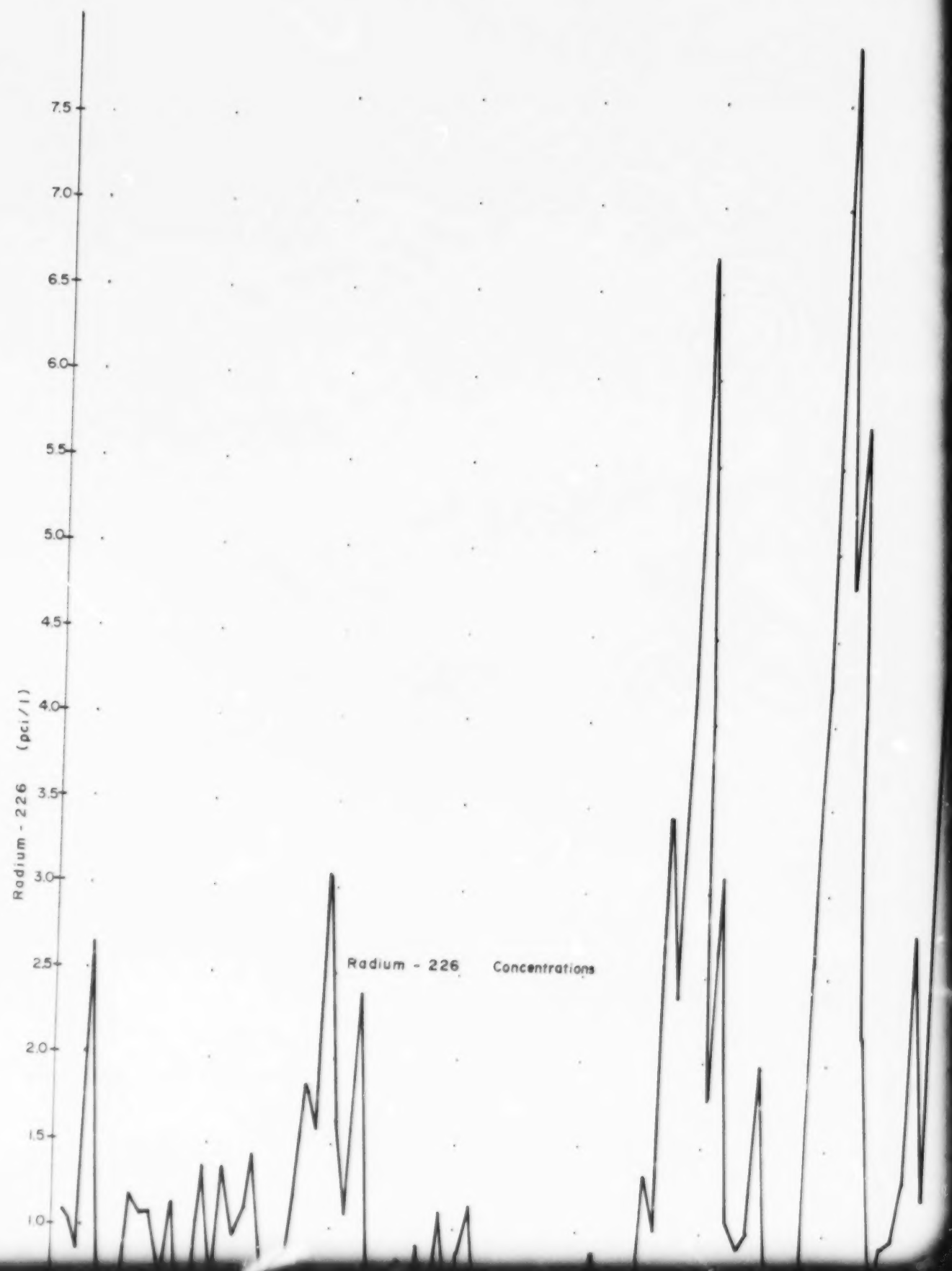
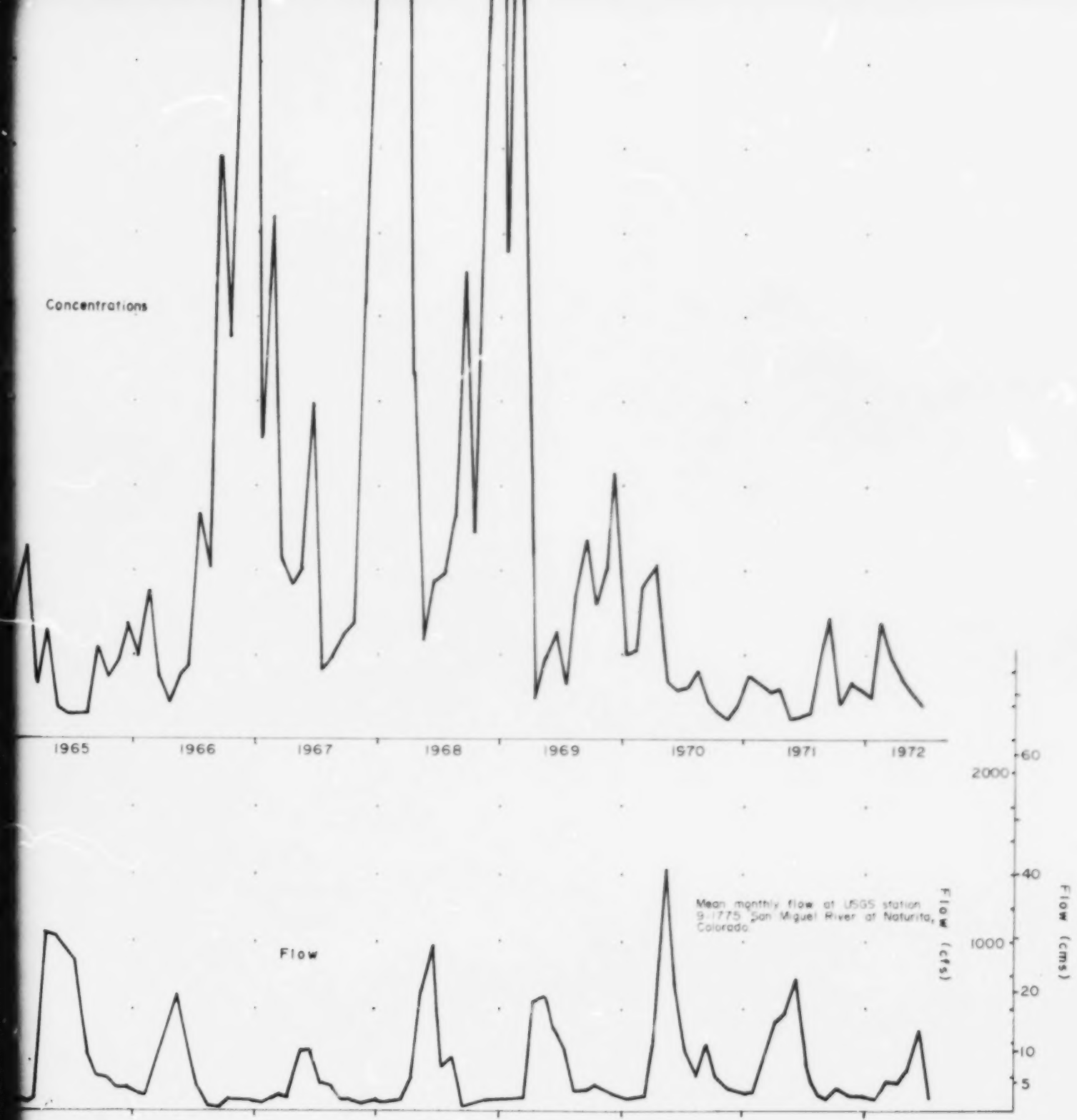
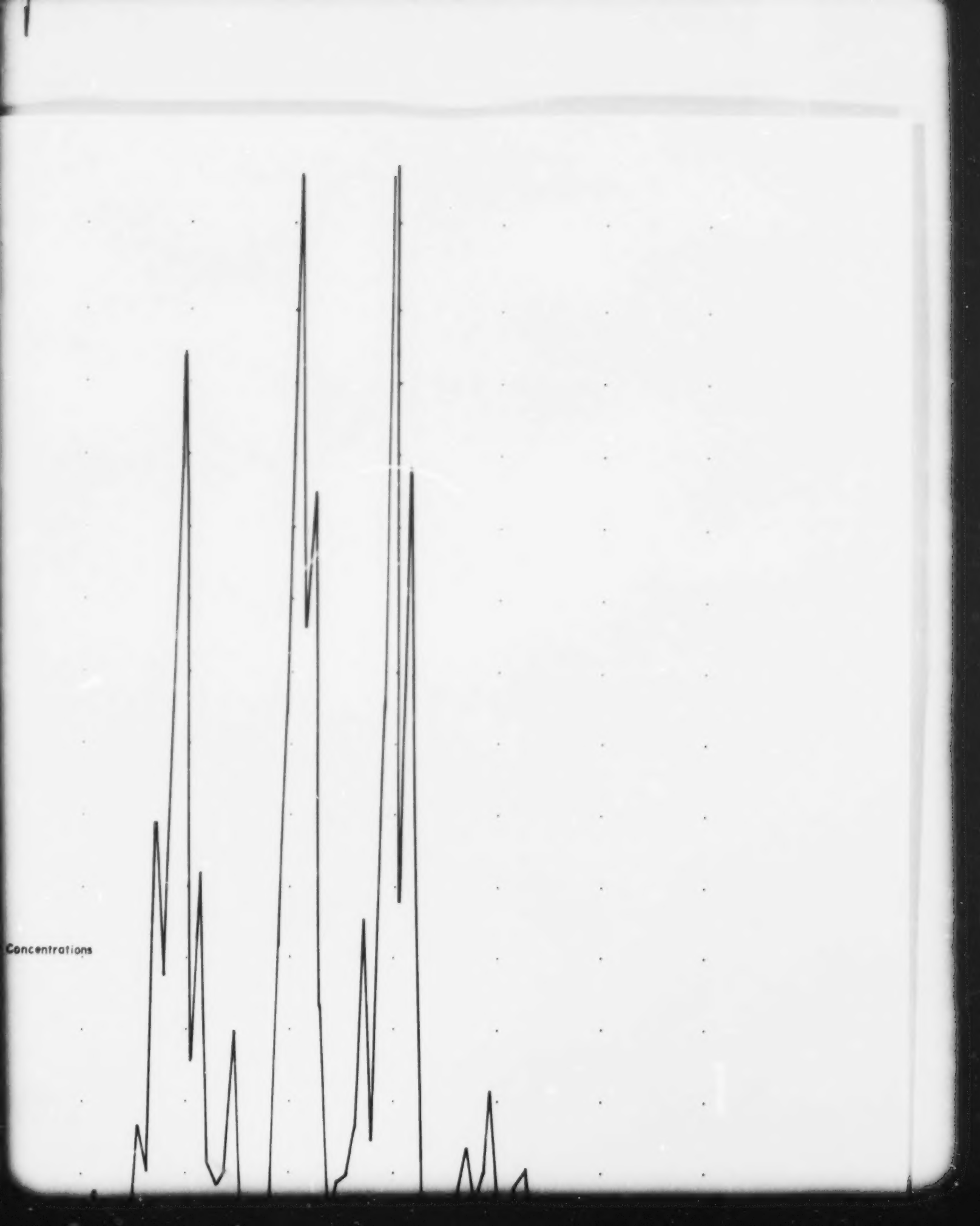


FIGURE 17 RADIUM–226 CONCENTRATIONS (DISSOLVED) AND AVERAGE MO
(SAN MIGUEL RIVER DOWNSTREAM OF URAVAN, COLORADO) C


Radium - 226 (pci/l)
7.5
7.0
6.5
6.0
5.5
5.0
4.5
4.0
3.5
3.0
2.5
2.0
1.5
1.0
Radium - 226 Concentrations



TIONS (DISSOLVED) AND AVERAGE MONTHLY FLOWS FOR STATION RMN-20
NSTREAM OF URAVAN, COLORADO) OCT 61-JUN 72


Concentrations

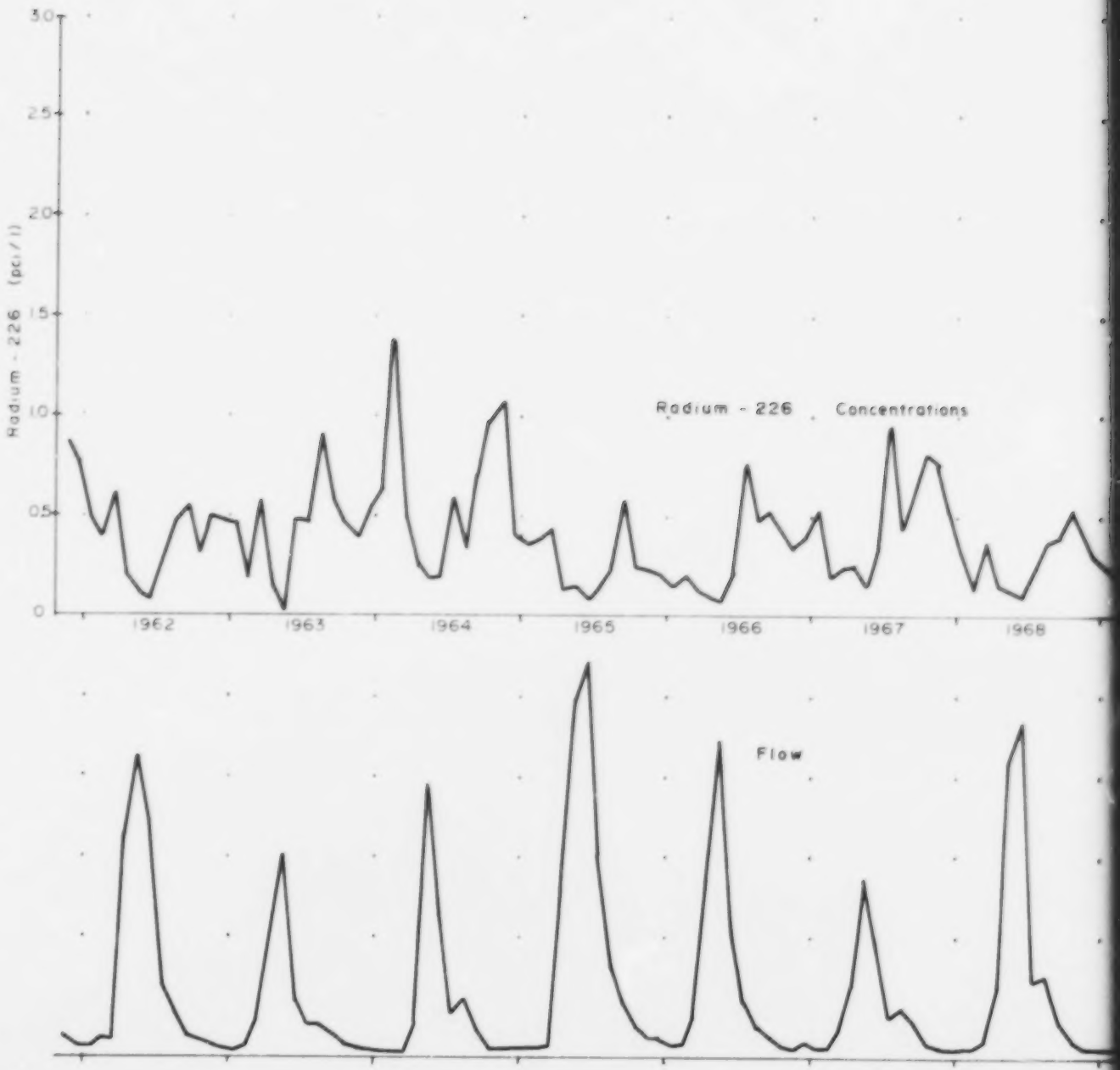
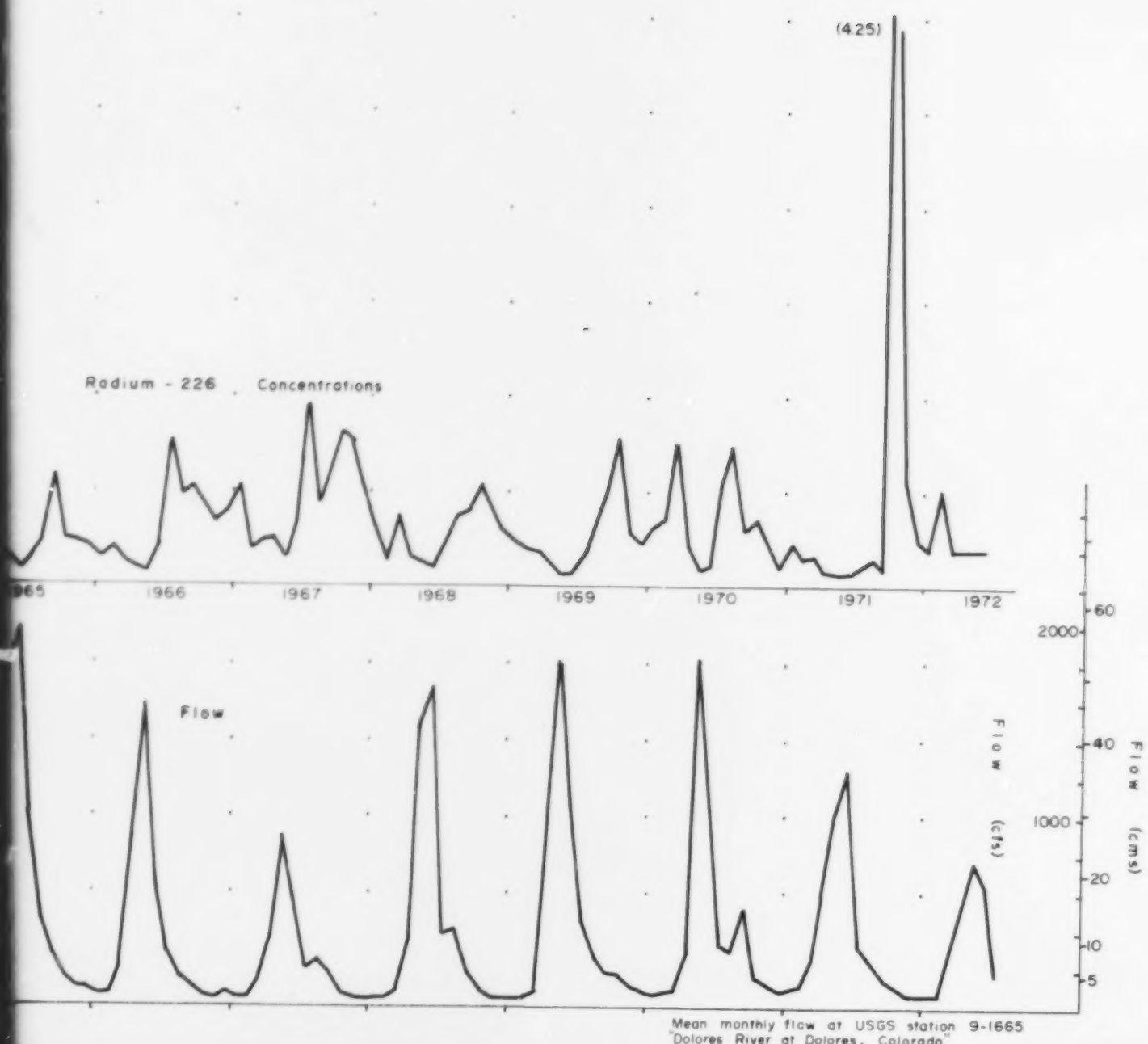


FIGURE 18 RADIUM–226 CONCENTRATIONS (DISSOLVED) AND AVERAGE MONTHLY
(DOLORES RIVER AT BEDROCK, COLORADO) OCT 61–JUN 72



S (DISSOLVED) AND AVERAGE MONTHLY FLOWS FOR STATION RMN–21
CK. COLORADO) OCT 61–JUN 72

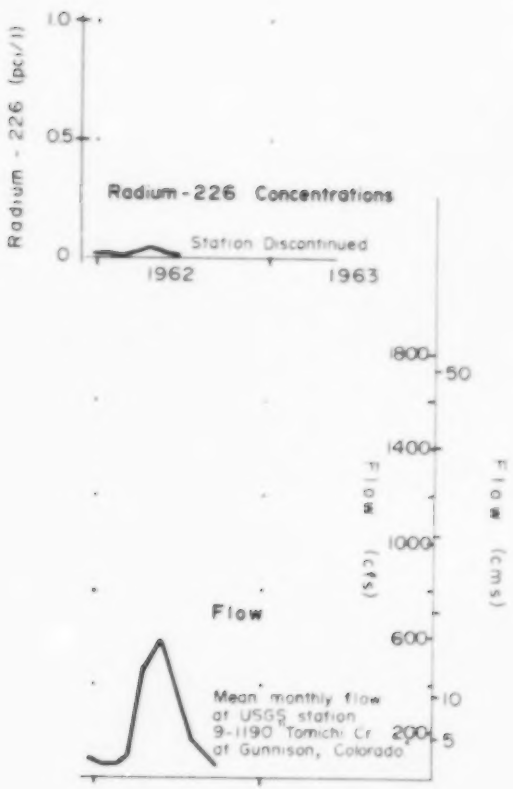
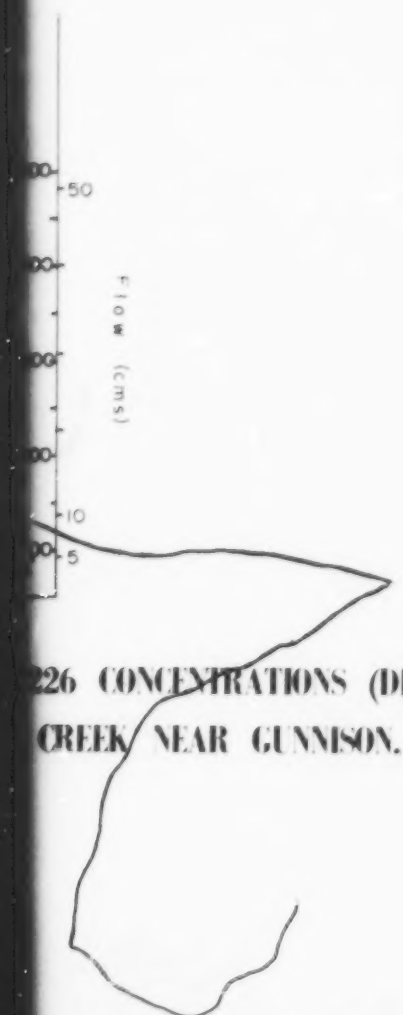


FIGURE 19 RADIUM–226 CONCENTRATIONS (DISSOLVED) AND AVERAGE (TOMICHI CREEK NEAR GUNNISON, COLORADO) DEC 61–JUN



226 CONCENTRATIONS (DISSOLVED) AND AVERAGE MONTHLY FLOWS FOR STATION RMN–22
CREEK NEAR GUNNISON, COLORADO) DEC 61–JUN 62

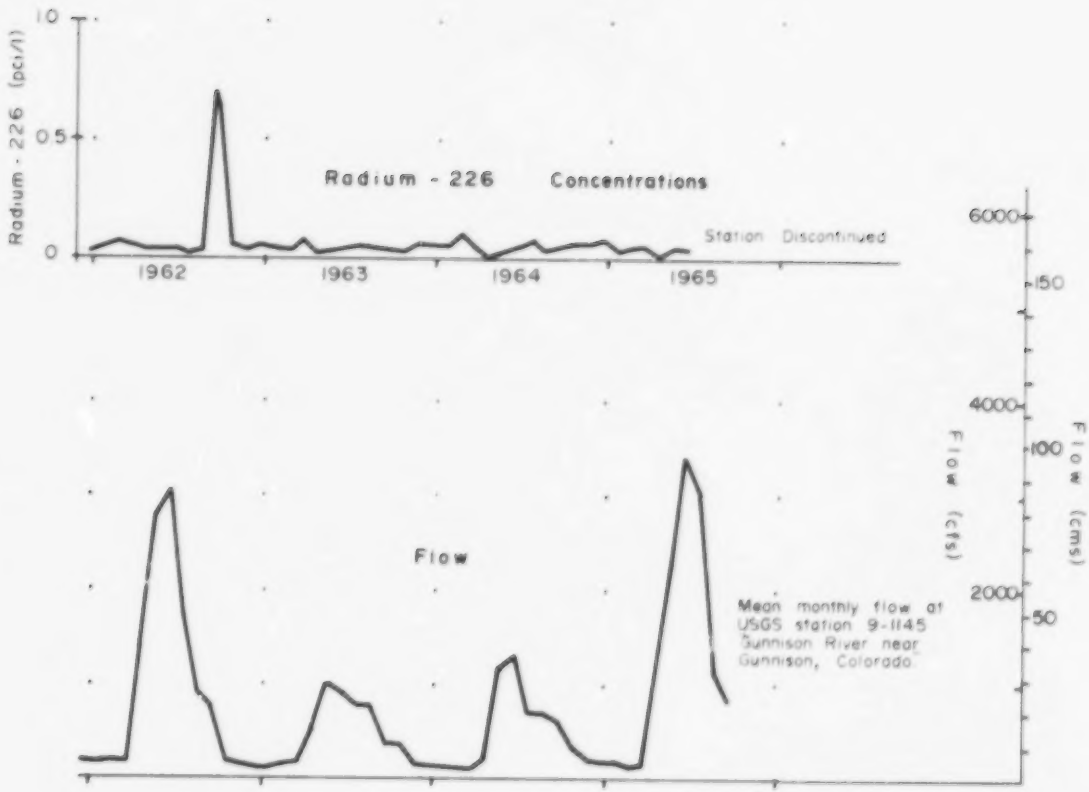
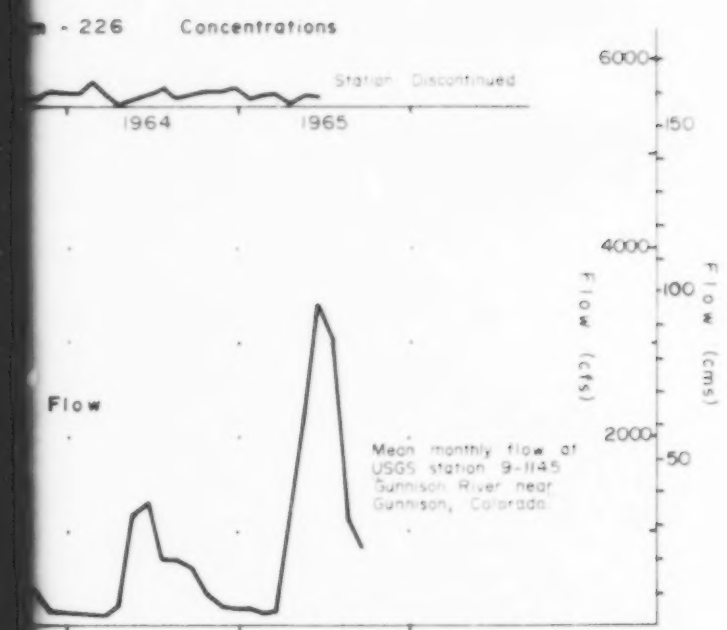


FIGURE 20 RADIUM–226 CONCENTRATIONS (DISSOLVED) AND AVERAGE MONT
(GUNNISON RIVER UPSTREAM OF GUNNISON, COLORADO) DEC 61–



-226 CONCENTRATIONS (DISSOLVED) AND AVERAGE MONTHLY FLOWS FOR STATION RMN-24
N RIVER UPSTREAM OF GUNNISON, COLORADO) DEC 61-JUN 65

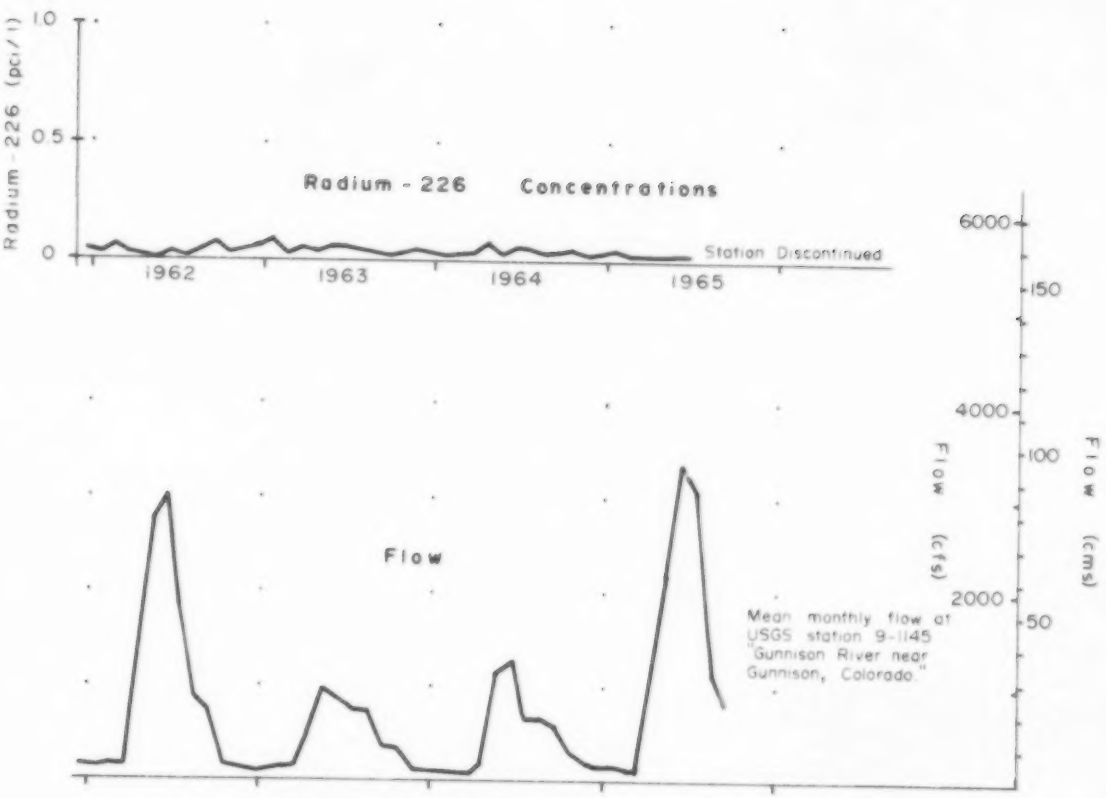
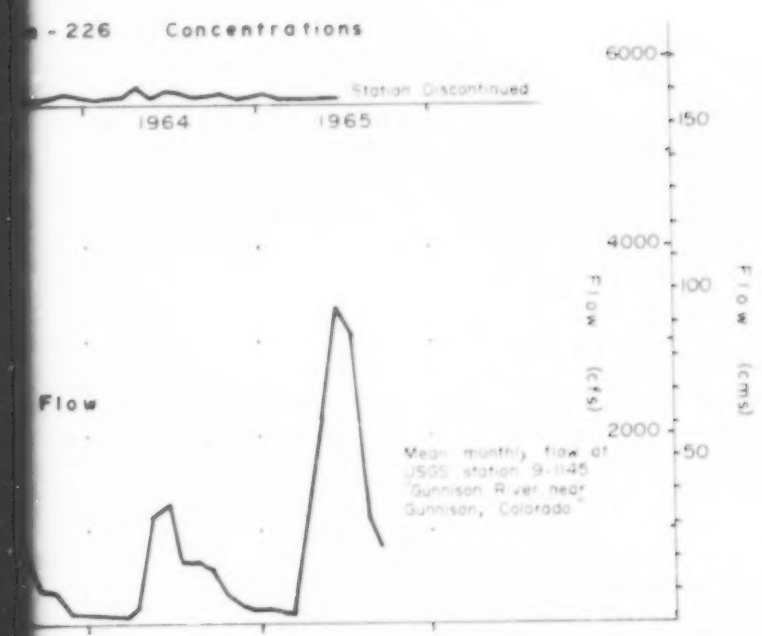


FIGURE 21 RADIUM–226 CONCENTRATIONS (DISSOLVED) AND AVERAGE MONTHL (GUNNISON RIVER DOWNSTREAM OF GUNNISON, COLORADO) DEC 6



-226 CONCENTRATIONS (DISSOLVED) AND AVERAGE MONTHLY FLOWS FOR STATION RMN-25
N RIVER DOWNSTREAM OF GUNNISON, COLORADO) DEC 61-JUN 65

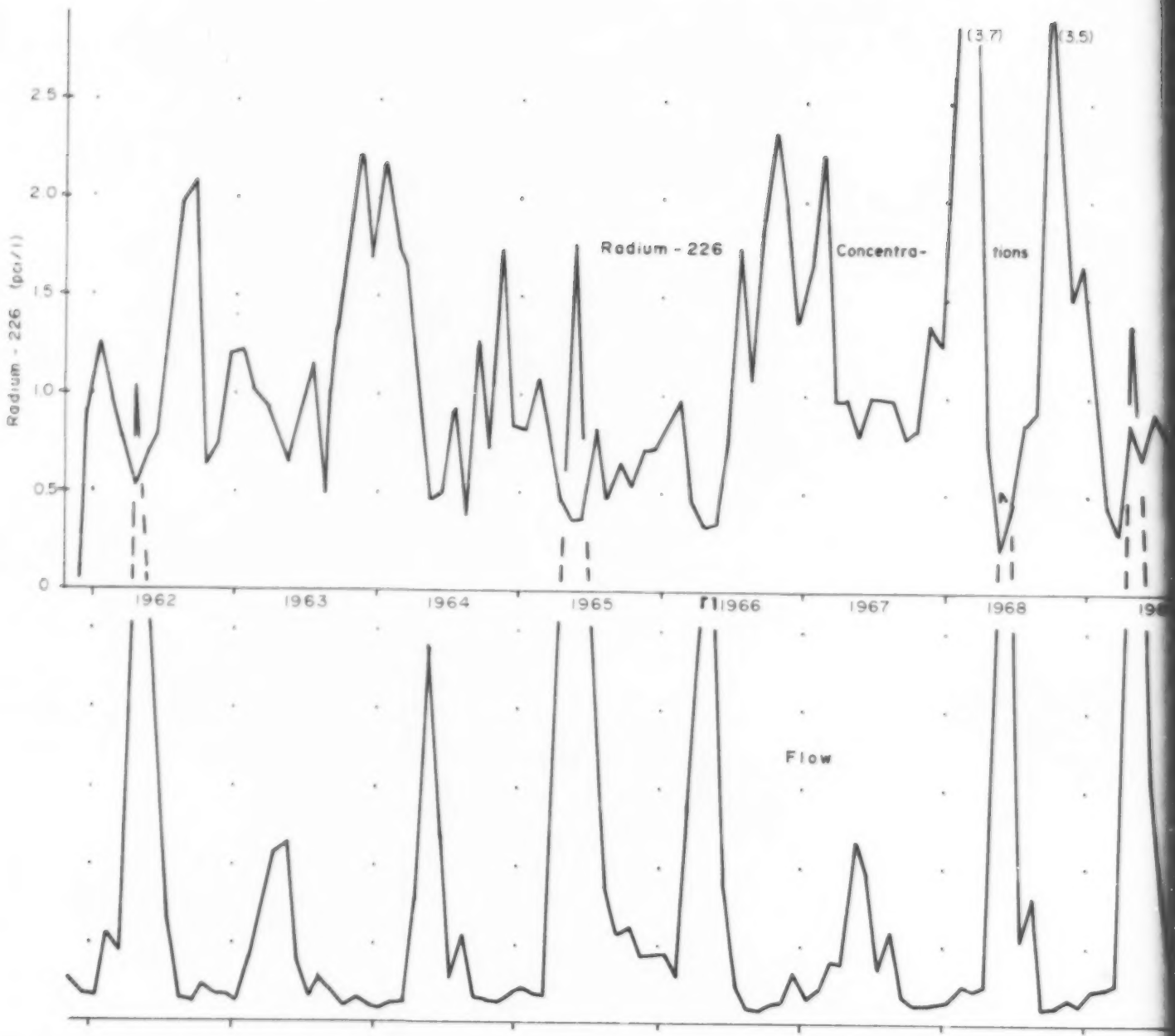
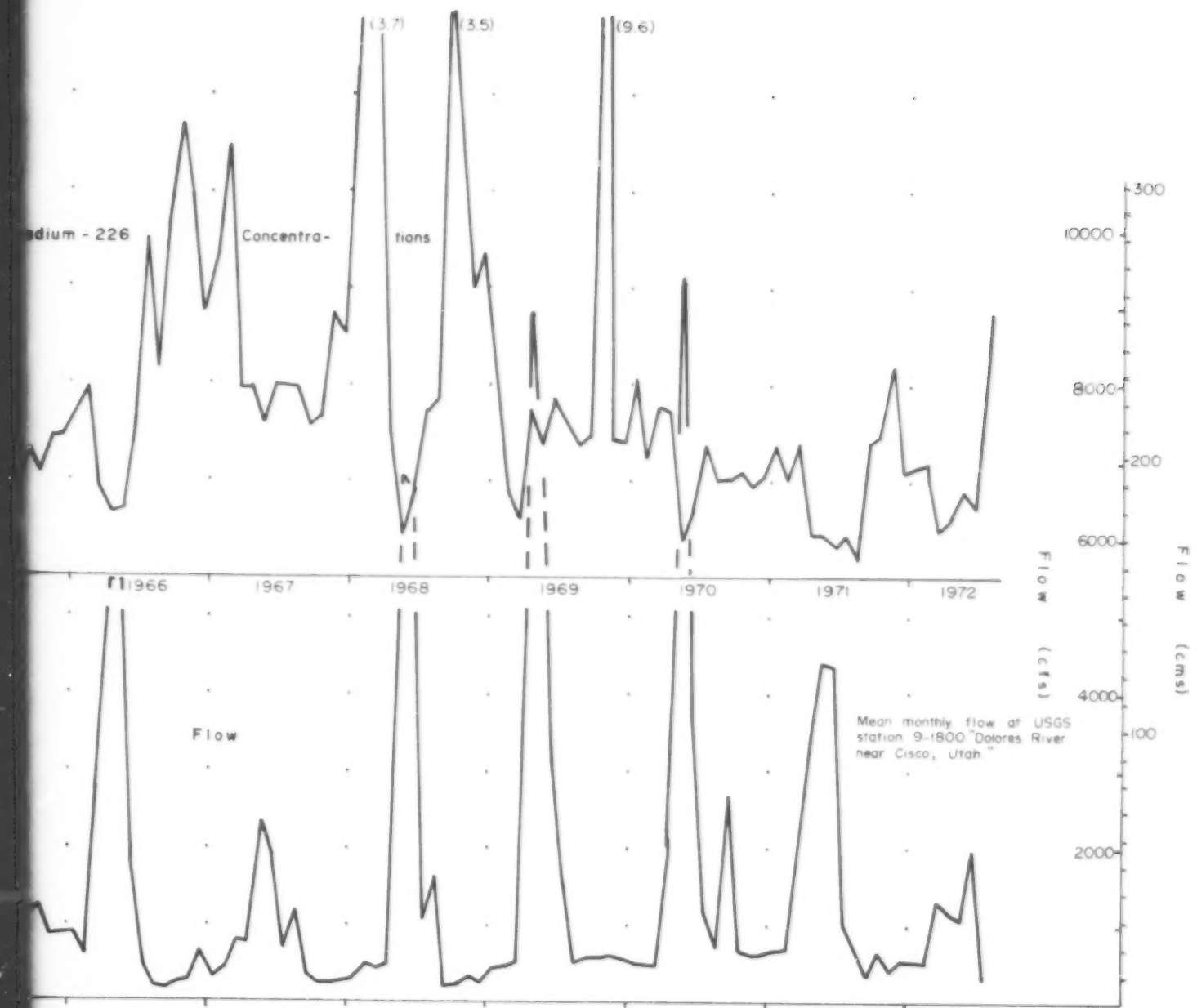


FIGURE 22 RADIUM–226 CONCENTRATIONS (DISSOLVED) AND AVERAGE MONTHLY FLO (DOLORES RIVER AT GATEWAY, COLORADO) OCT 61–JUL 72



(DISSOLVED) AND AVERAGE MONTHLY FLOWS FOR STATION RMN–26

Y, COLORADO) OCT 61–JUL 72

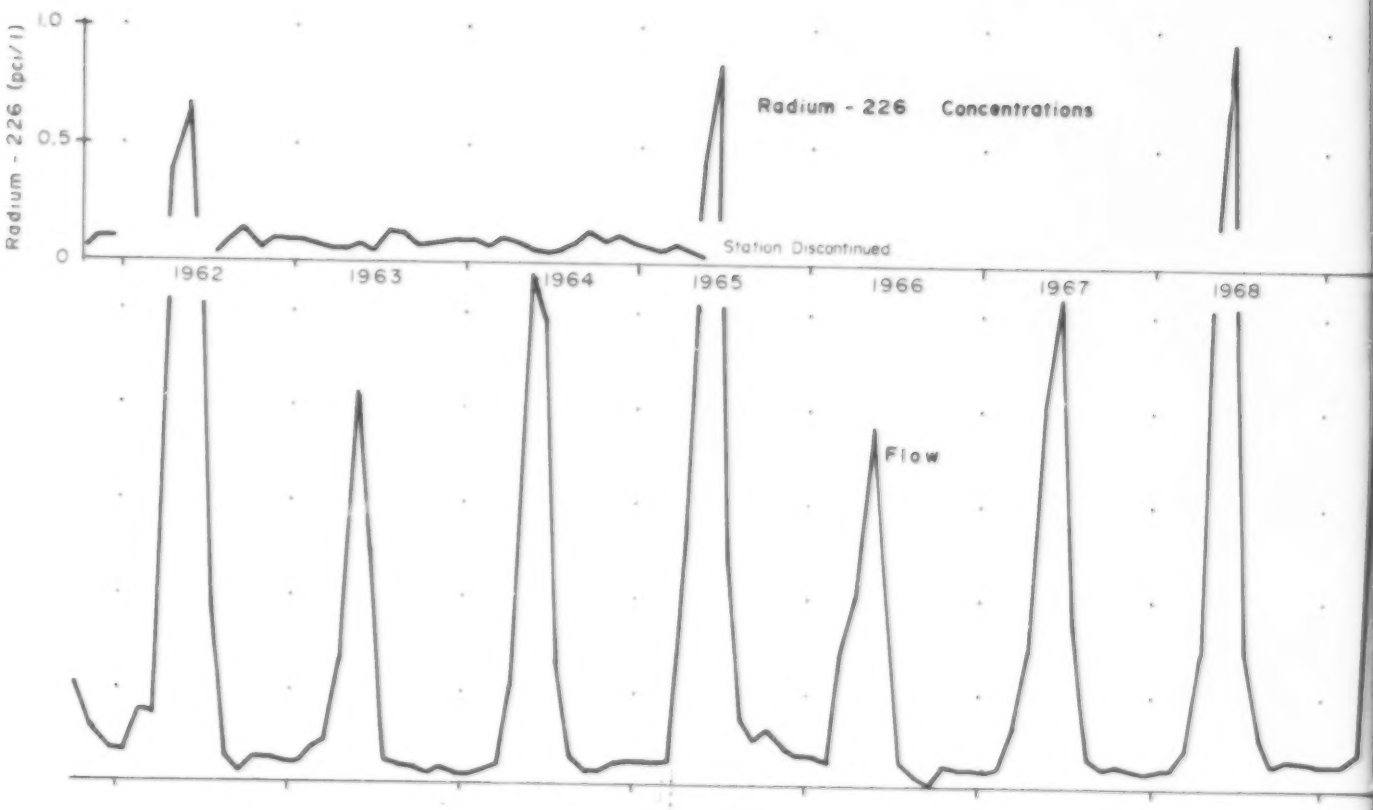
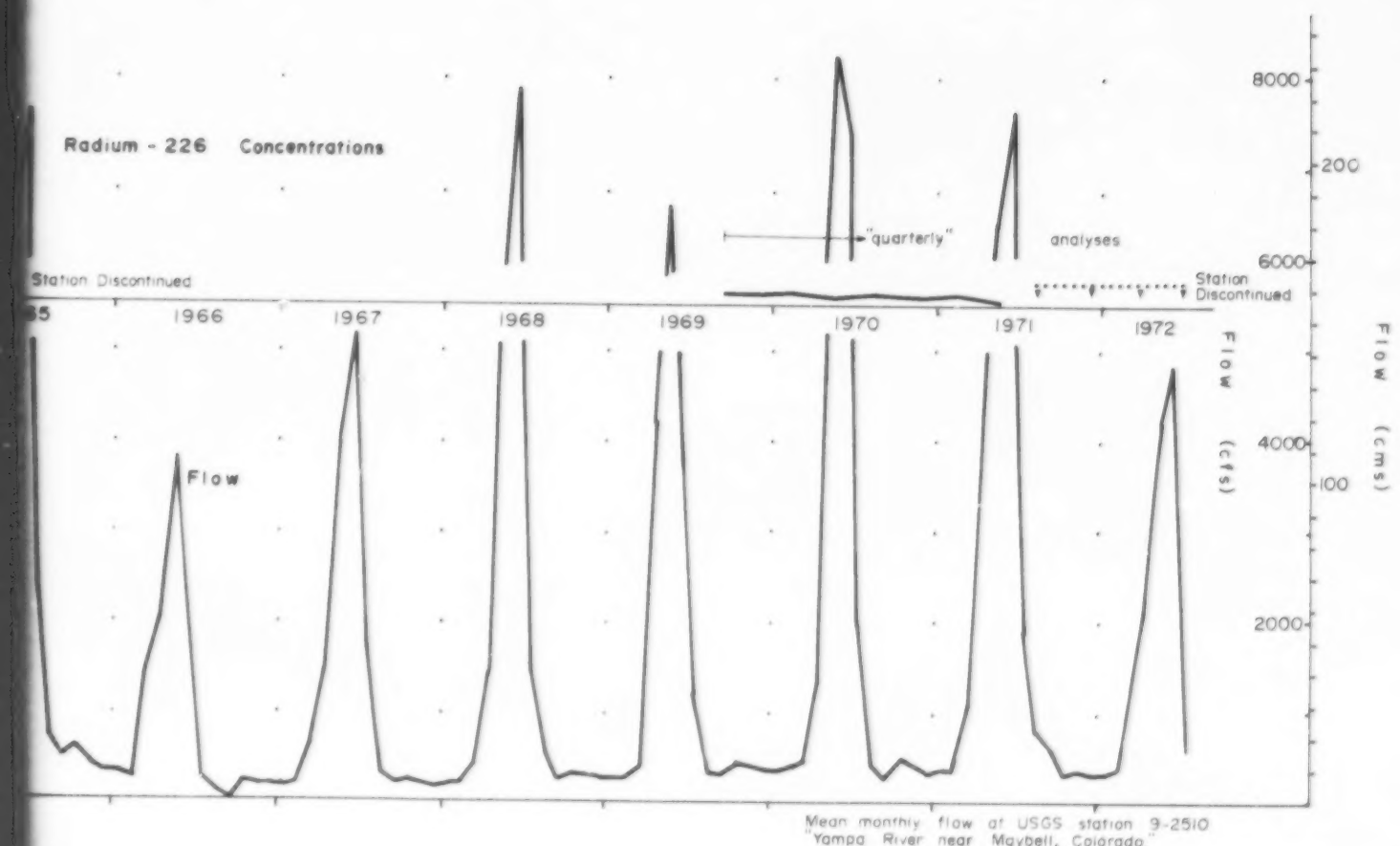


FIGURE 23 RADIUM–226 CONCENTRATIONS (DISSOLVED) AND AVERAGE MONTHLY FLOW (YAMPA RIVER DOWNSTREAM OF MAYBELL, COLORADO) OCT 61–JUN 72



(DISSOLVED) AND AVERAGE MONTHLY FLOWS FOR STATION RMN–28
F MAYBELL, COLORADO) OCT 61–JUN 72

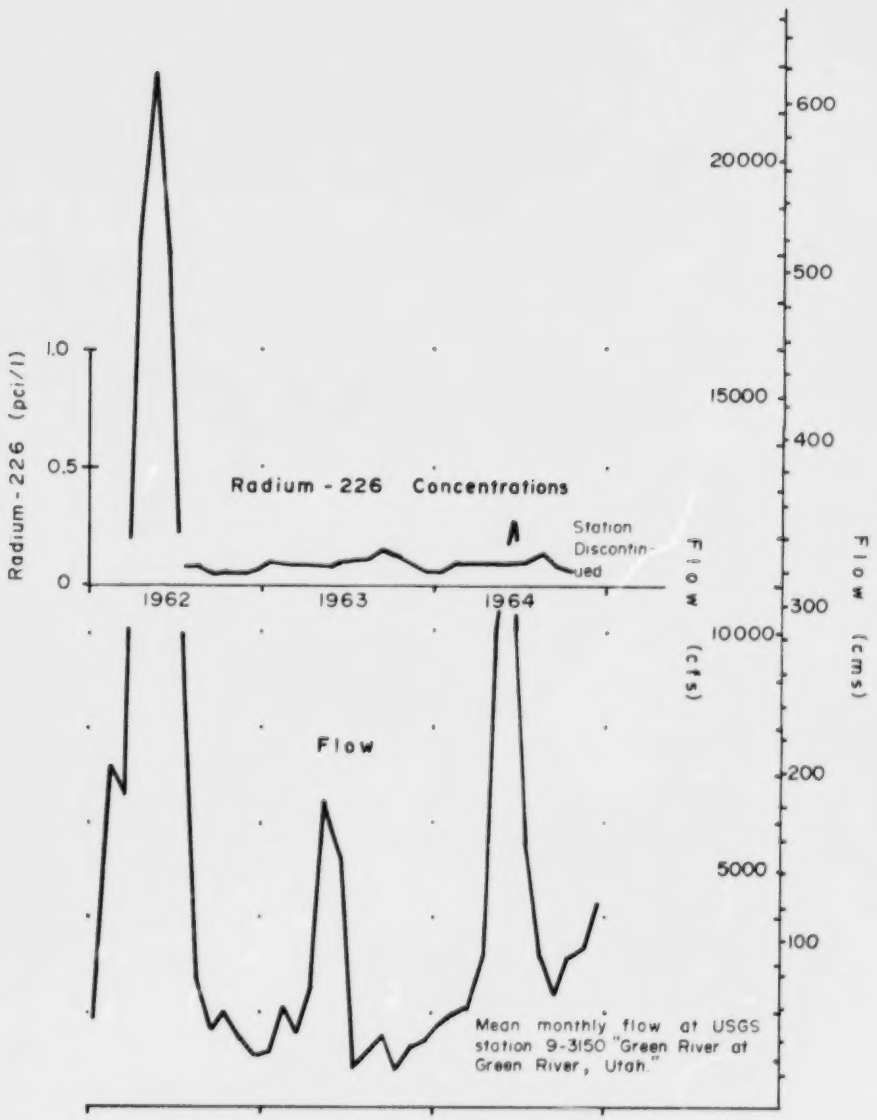
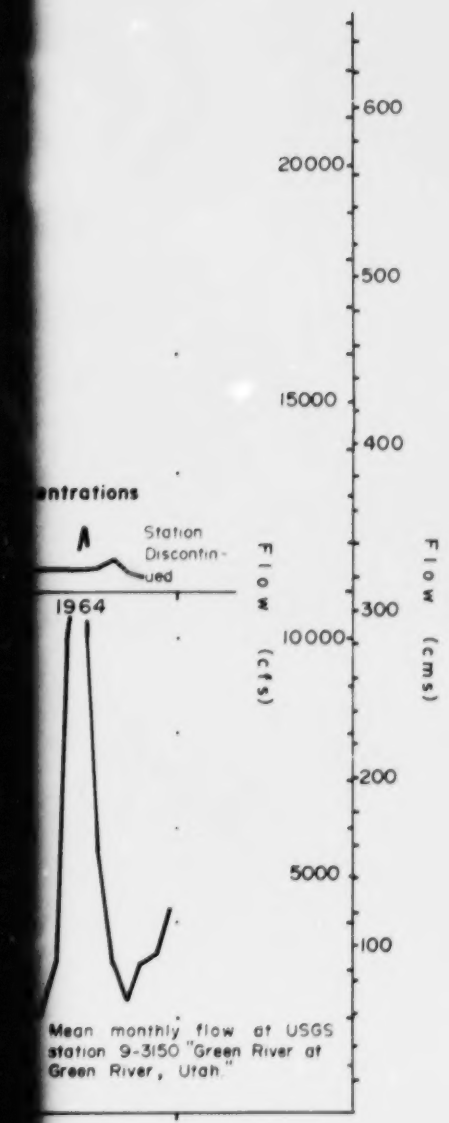


FIGURE 24 RADIUM–226 CONCENTRATIONS (DISSOLVED) AND AVERAGE MONTHLY
(GREEN RIVER DOWNSTREAM OF GREEN RIVER, UTAH) JUL 62–OCT 64



CONCENTRATIONS (DISSOLVED) AND AVERAGE MONTHLY FLOWS FOR STATION RMN–29
R DOWNSTREAM OF GREEN RIVER, UTAH) JUL 62–OCT 64

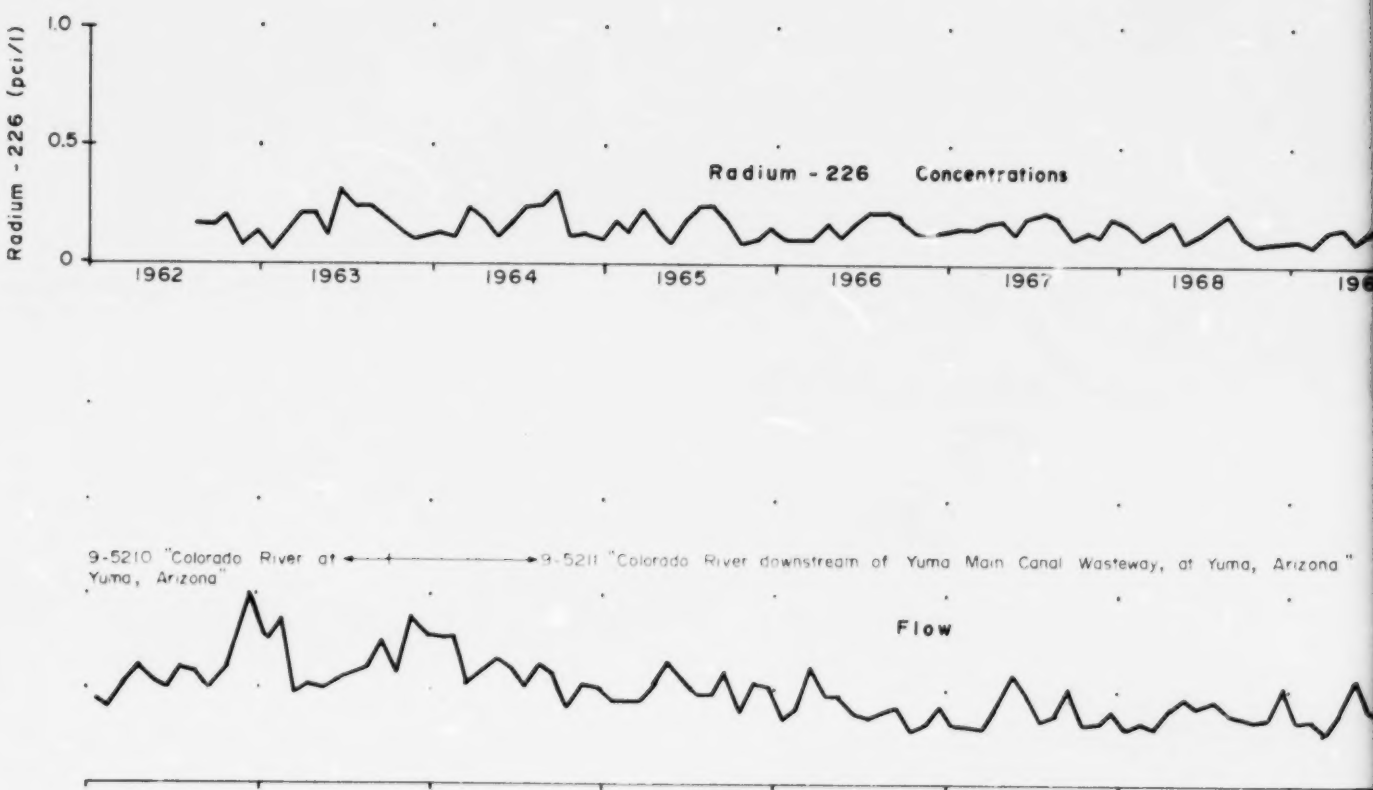
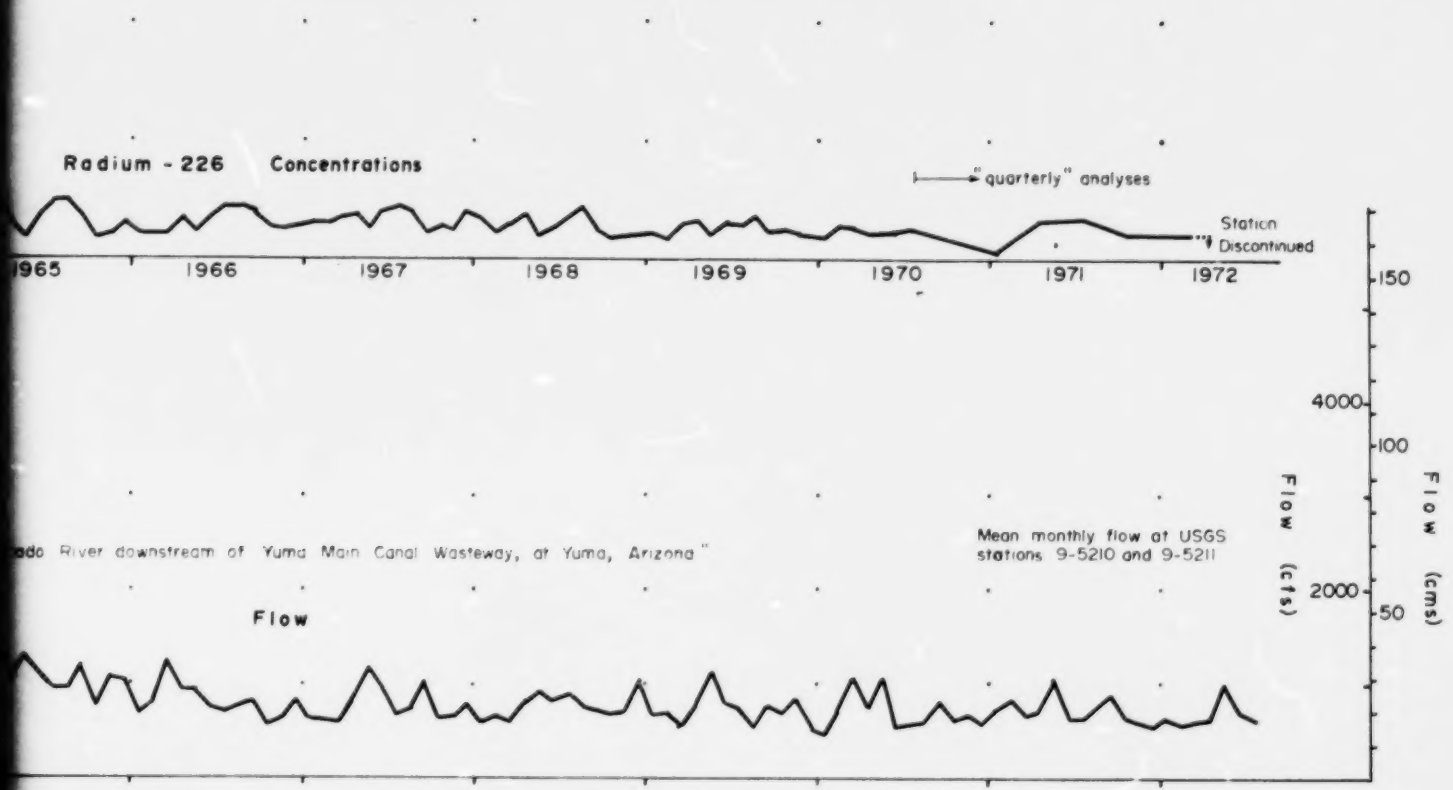


FIGURE 25 RADIUM–226 CONCENTRATIONS (DISSOLVED) AND AVERAGE MONTHLY (COLORADO RIVER AT NORTHERLY US–MEXICO BOUNDARY) JULY 62–



TIONS (DISSOLVED) AND AVERAGE MONTHLY FLOWS FOR STATION RMN–30
ORTHERLY US–MEXICO BOUNDARY) JULY 62–APR 72

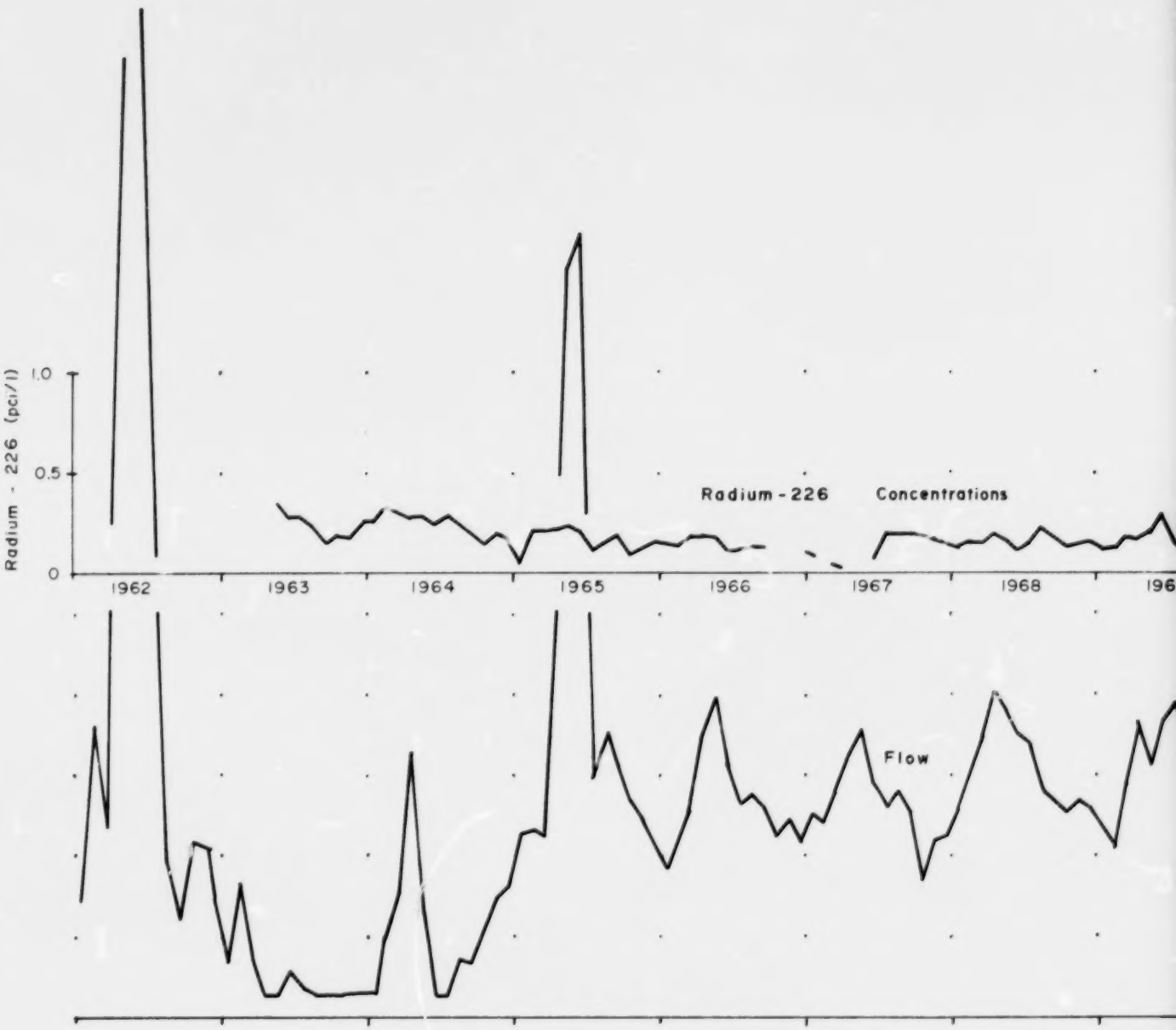
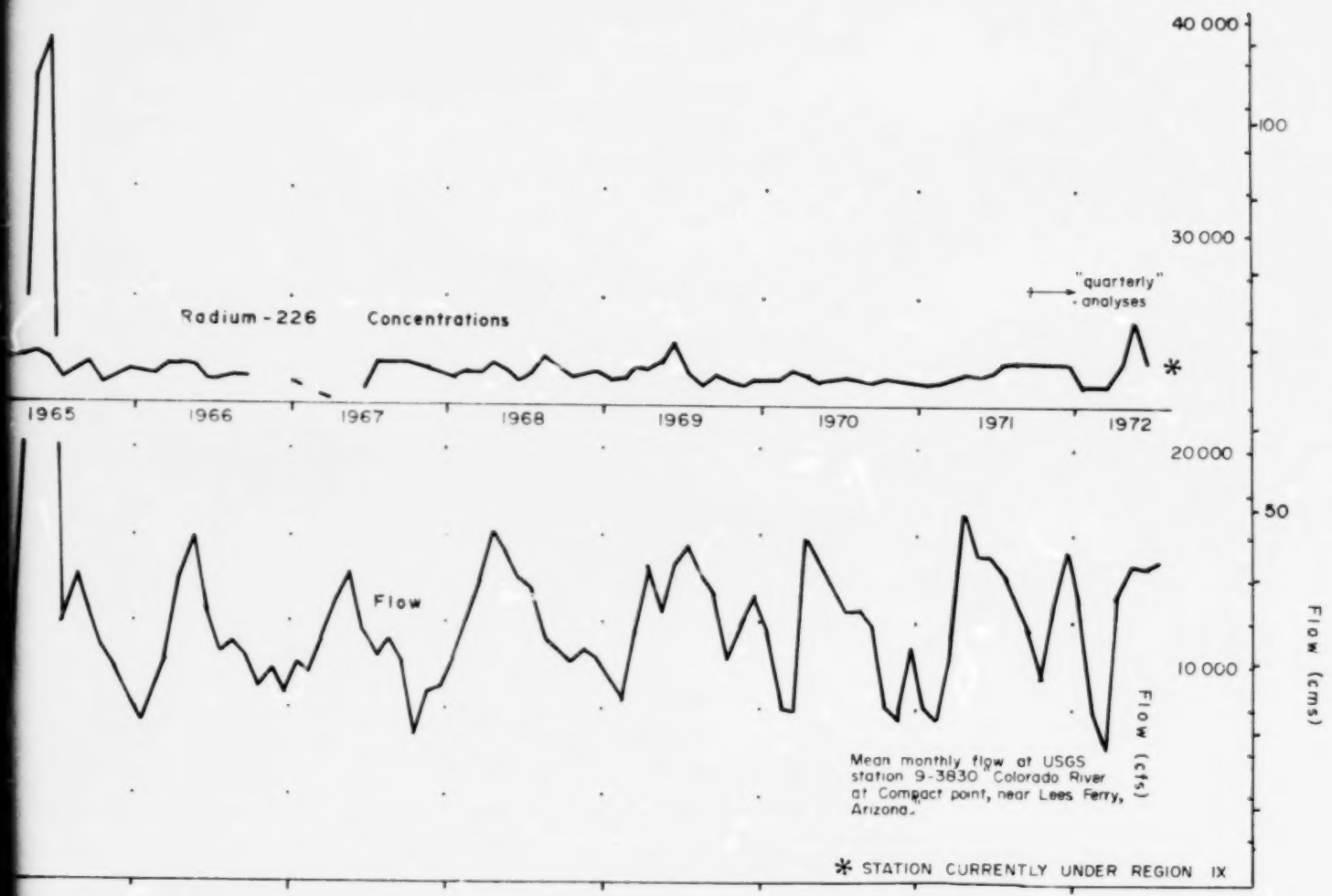


FIGURE 26 RADIUM–226 CONCENTRATIONS (DISSOLVED) AND AVERAGE MONTHLY F (COLORADO RIVER AT PAGE, ARIZONA) MAY 63 –JUN 72



ATIONS (DISSOLVED) AND AVERAGE MONTHLY FLOWS FOR STATION RMN–31

PAGE, ARIZONA) MAY 63 –JUN 72

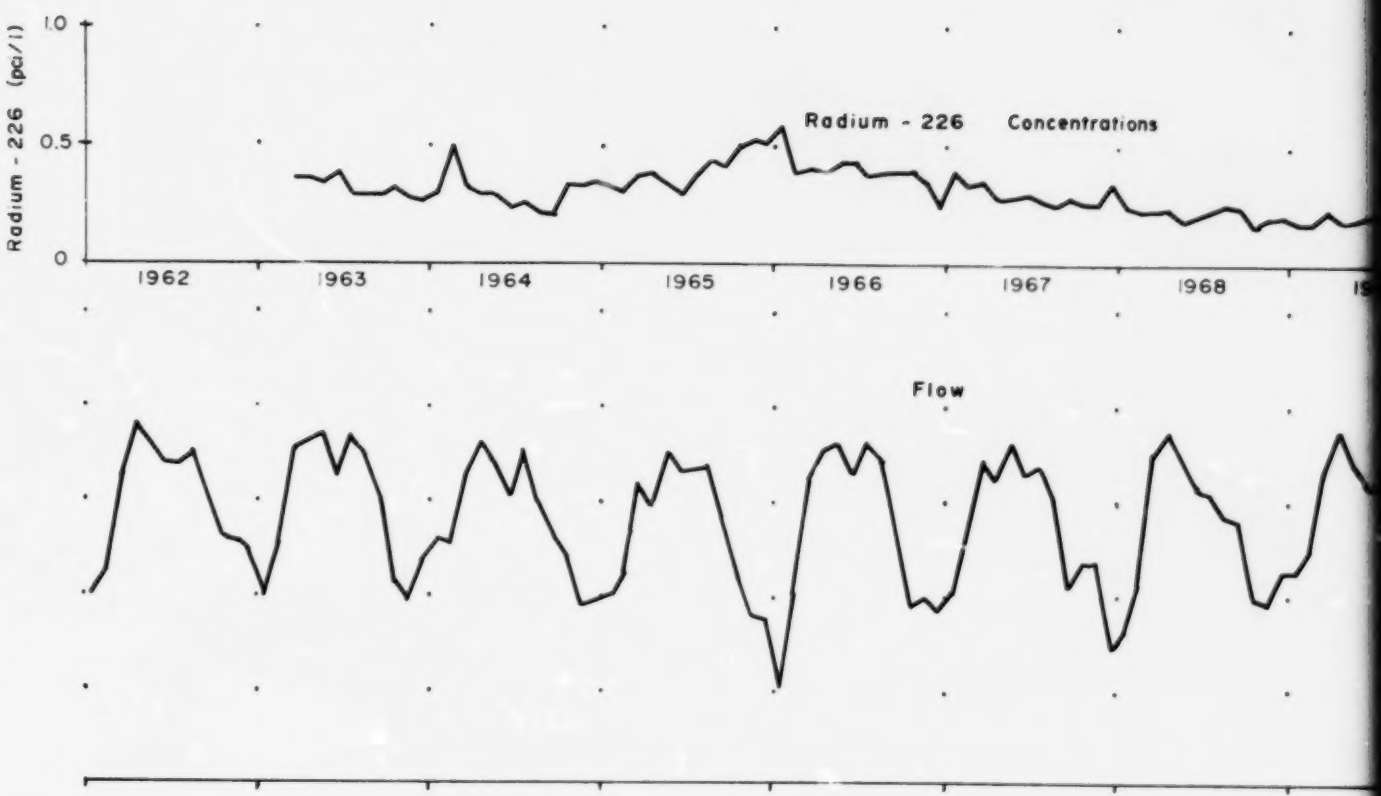
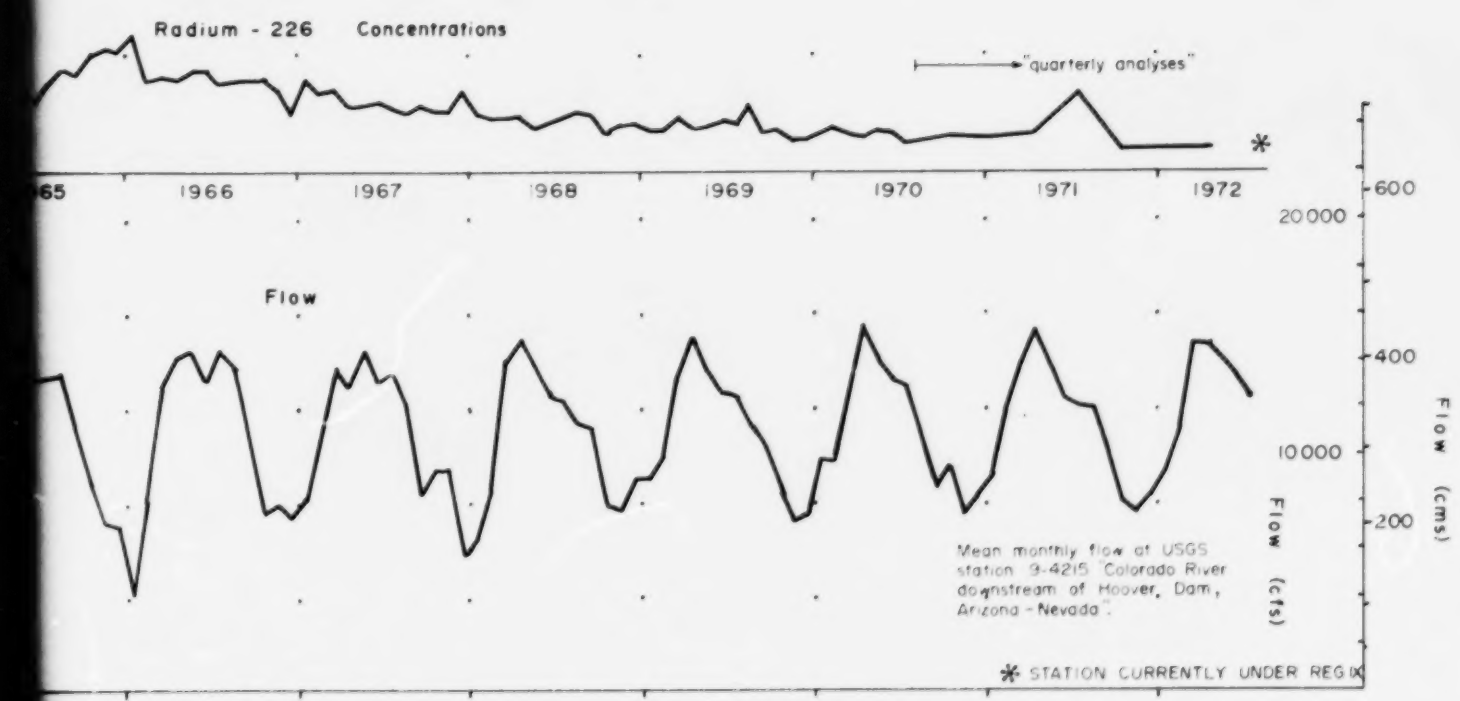


FIGURE 27 RADIUM–226 CONCENTRATIONS (DISSOLVED) AND AVERAGE MONTHLY F
(COLORADO RIVER AT HOOVER DAM–NEAR BOULDER CITY, NEVADA) I



ONS (DISSOLVED) AND AVERAGE MONTHLY FLOWS FOR STATION RMN–32

OVER DAM–NEAR BOULDER CITY, NEVADA) MAR 63–OCT 68

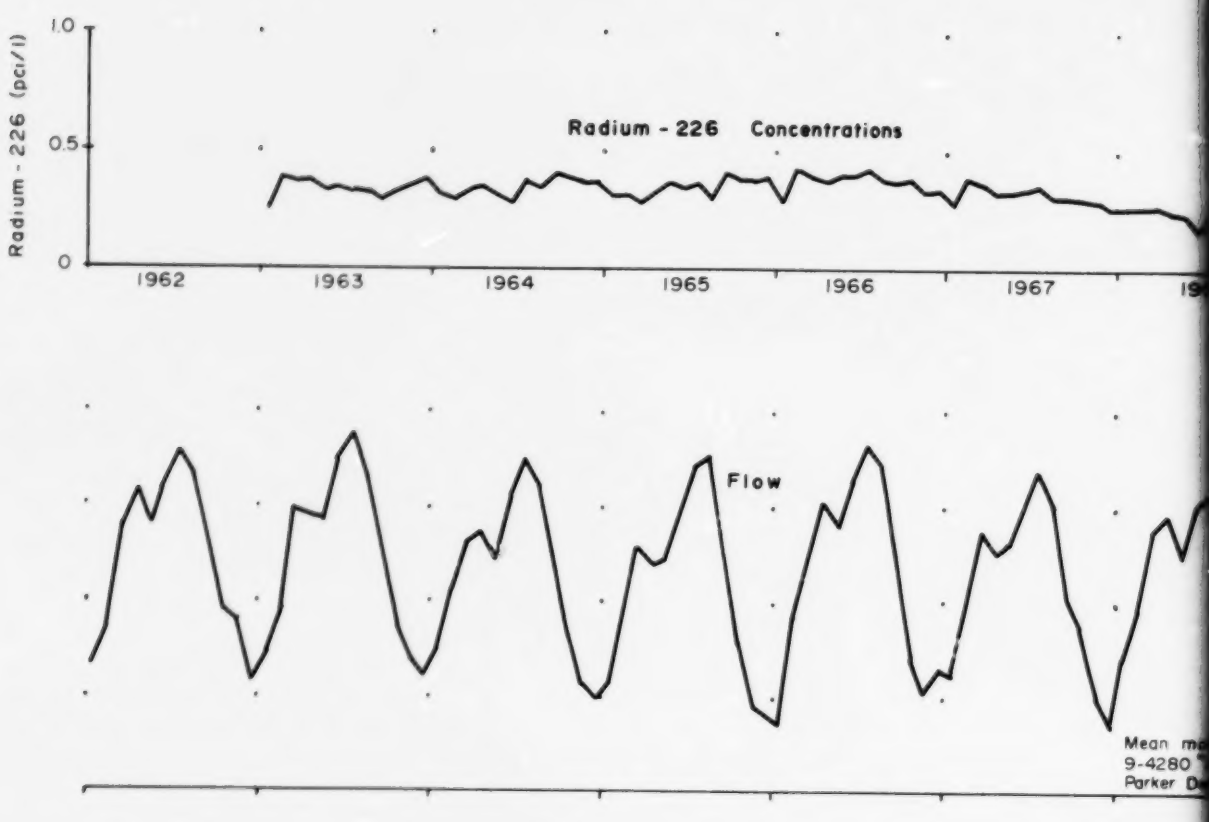
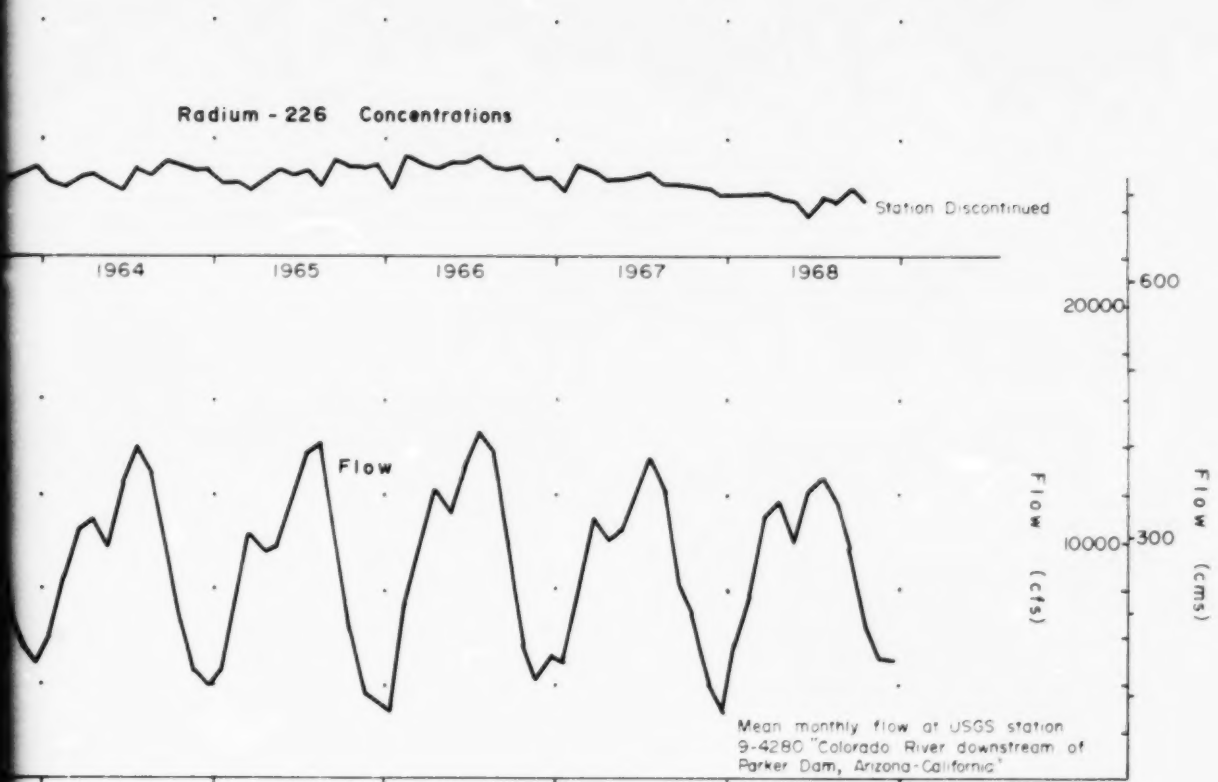
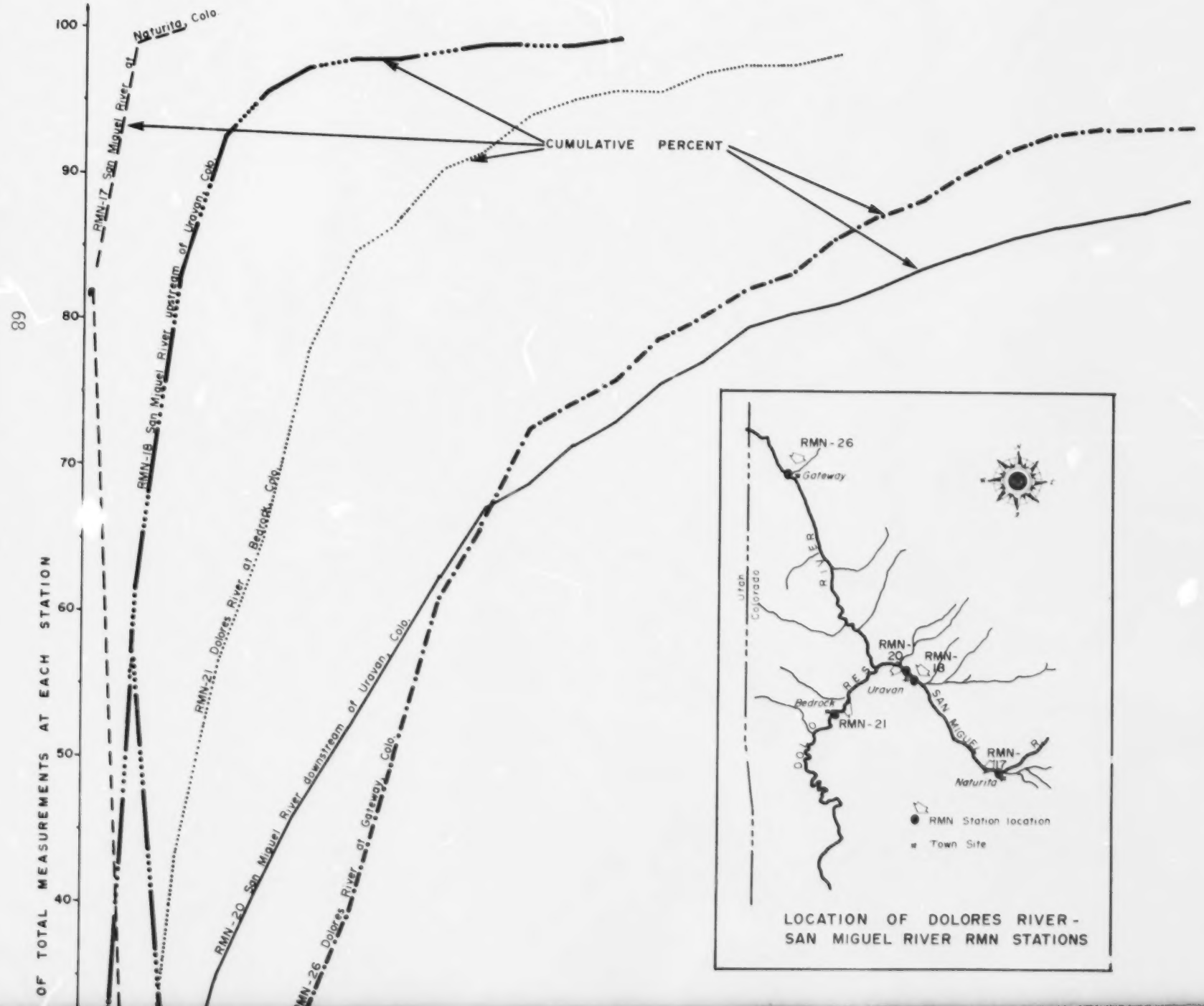
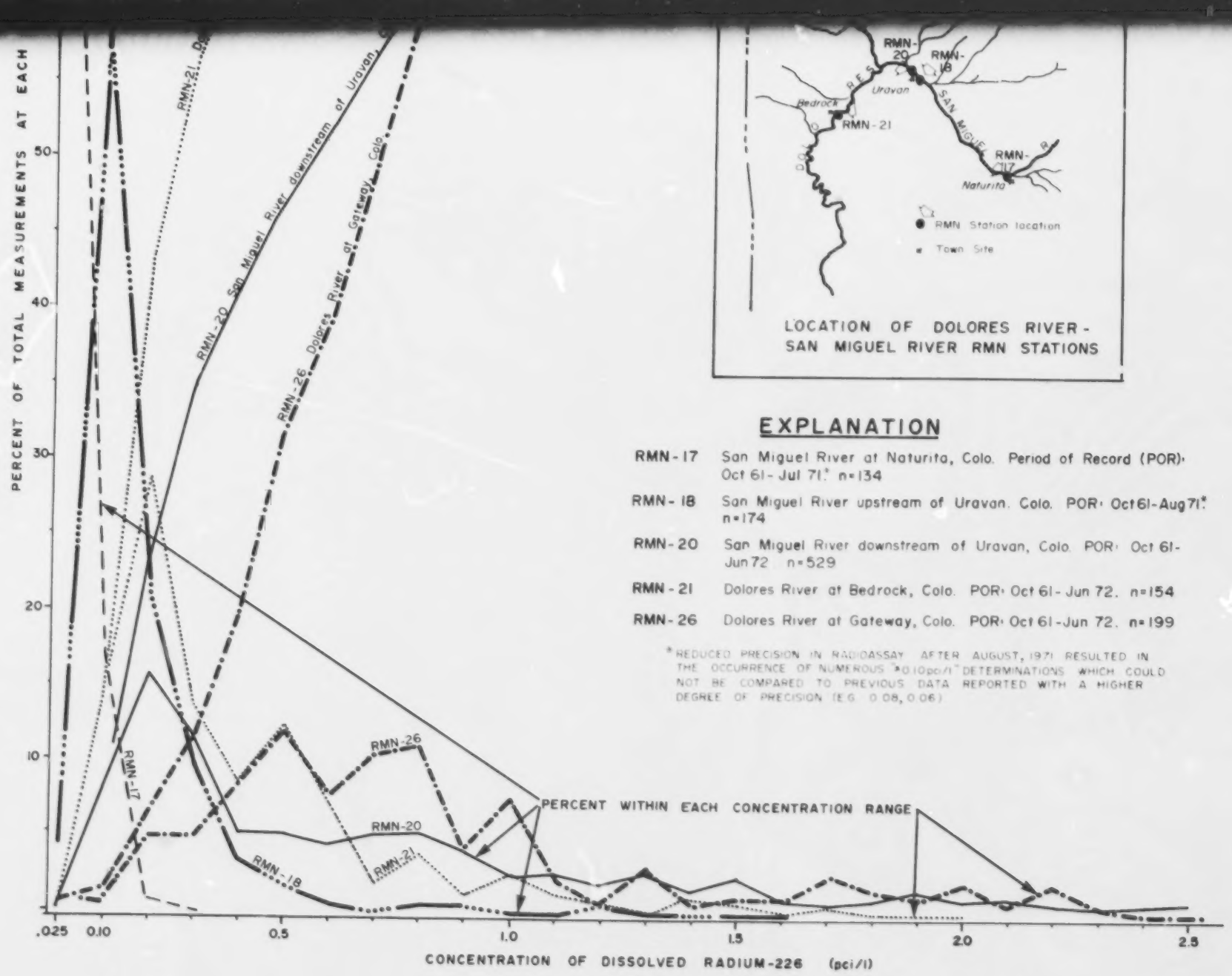


**FIGURE 28 RADIUM–226 CONCENTRATIONS (DISSOLVED) AND AVERAGE MONT
(COLORADO RIVER AT MWD INTAKE–NEAR PARKER DAM, CAL**



CONCENTRATIONS (DISSOLVED) AND AVERAGE MONTHLY FLOWS FOR STATION RMN–33
RIVER AT MWD INTAKE–NEAR PARKER DAM, CALIFORNIA) JAN 63–OCT 68


100
90
80
70
60
50
40
OF TOTAL MEASUREMENTS AT EACH STATION
CUMULATIVE PERCENT
RMN-17 San Miguel River at Naturita, Colo.
RMN-18 San Miguel River upstream of Uravan, Colo.
RMN-21 Dolores River at Bedrock, Colo.
RMN-20 San Miguel River downstream of Uravan, Colo.
RMN-26 Dolores River at Gateway, Colo.
RMN-26
Gateway
Utah
Colorado
RMN-20
RMN-18
Uravan
Bedrock
RMN-21
RMN-17
Naturita
RMN Station location
Town Site
LOCATION OF DOLORES RIVER - SAN MIGUEL RIVER RMN STATIONS



LOCATION OF DOLORES RIVER - SAN MIGUEL RIVER RMN STATIONS

EXPLANATION

RMN-17	San Miguel River at Naturita, Colo. Period of Record (POR): Oct 61 - Jul 71.* n=134
RMN-18	San Miguel River upstream of Uravan, Colo. POR: Oct 61-Aug 71.* n=174
RMN-20	San Miguel River downstream of Uravan, Colo. POR: Oct 61-Jun 72 n=529
RMN-21	Dolores River at Bedrock, Colo. POR: Oct 61 - Jun 72. n=154
RMN-26	Dolores River at Gateway, Colo. POR: Oct 61 - Jun 72. n=199

*REDUCED PRECISION IN RADIOASSAY AFTER AUGUST, 1971 RESULTED IN THE OCCURRENCE OF NUMEROUS "0.10 pci/l" DETERMINATIONS WHICH COULD NOT BE COMPARED TO PREVIOUS DATA REPORTED WITH A HIGHER DEGREE OF PRECISION (E.G. 0.08, 0.06)

FIGURE 29 COMPARISON OF DISTRIBUTIONS OF RADIUM–226 CONCENTRATIONS (DISSOLVED) AT FIVE RMN STATIONS LOCATED IN THE DOLORES RIVER-SAN MIGUEL RIVER SYSTEM, WESTERN COLORADO OCT 61-JUN 72

SUMMARY AND CONCLUSIONS

The Radiological Monitoring Network has collected radium-226 and total uranium (both as "dissolved solids") data along with less frequent measurements of lead-210, polonium-210, thorium, strontium, total alpha, and total beta, from 1961 to the present. The report covers over 3,000 measurements of radium-226 and total uranium from surface waters of the Colorado River Basin (watershed). As many as twenty-seven stations have operated with most of the locations placed upstream and downstream of the majority of the eighteen uranium mill sites that exist in the Basin. A recent decline in the number of active stations (to 15), the frequency of sample collection, and the rapidity of radioassay has diminished the worth of the network, but nonetheless the Network has accomplished its objectives to date.

The Network serves as a spill detection and warning system downstream of the operating mills, especially the mill at Uravan, Colorado. The Network has quantified the impacts of uranium mills and tailings piles. The mean background concentration of radium-226 (dissolved) in the upper Basin is calculated to be 0.08 pci/l. The mean background concentration of total uranium (also dissolved) in the upper Basin is about 2.1 µg/l. Concentrations of radium as high as 26 pci/l and of uranium as high as 260 µg/l have been measured in single samples from major surface waters. Mean annual concentrations of 3.3 pci/l Ra^{226} and 33.5 µg/l were the highest noted during the decade of sampling.

Average (monthly and annual) concentrations have decreased from the inception of the Network (1961) to July of 1972 in a somewhat inconsistent (nonlinear) fashion. Noteable decreases in annual averages have occurred for uranium on the Gunnison River (RMN 5) the Colorado River (RMN 6, 9, 10, 30 and 31), the Animas River (RMN 12), and the San Juan River (RMN 14, 14S and 16). Similar long-term decreases in radium-226 are noteable only in the Colorado River near Moab, Utah (RMN 9 and 10) and the Animas River (RMN 12). Conversely, stations RMN 20 and 26 showed higher radium and uranium concentrations in 1968.

Average concentrations for the periods of record at each station ranged from 0.02 pci/l Ra^{226} to 1.22 pci/l Ra^{226} and 1.21 µg/l U_{tot} to 19.71 µg/l U_{tot}. The high concentrations occurred downstream of an operating uranium mill.

The elevated radium and uranium concentrations persist from the headwaters of the Colorado River system through Arizona. Combined measurements at Page, Arizona (Lake Powell), Boulder City, Nevada (Lake Mead), Lake Havasu, and the Northerly International Boundry (Mexico)

show mean concentrations of 0.23 pci/l Ra^{226} and 7.3 µg/l U_{tot}. Both values are about three times the average background concentration found in the headwaters of the Colorado River system. Some decreases in these downstream values over the long term are indicated, however. Of course some "natural" increase in concentrations is to be expected in areas of uranium deposits.

The decrease in radioactivity in the surface waters of the Colorado River Basin is attributed to removal of uranium tailings from water courses, better effluent treatment by the few mills operating, and, not the least, the decline of uranium milling activities. Increased leasing of uranium reserves and a larger role for nuclear reactors in the energy supply situation could reverse the decreasing trend. A new uranium mill has been situated in Utah and there is some increase in nuclear fuel preparation activities in Wyoming (but not in the Colorado River Basin).

The long-term measurements reveal an inverse relationship between radium-226 concentrations in surface waters and flow at many RMN stations. That is, high concentrations of radium-226 generally occur during periods of low flow. The mechanism controlling the high concentrations of dissolved radium is not understood but may involve erosion from the bed load of streams and recharge by ground water containing a higher radium-226 content.

Quarterly measurements of gross alpha, gross beta, thorium-α, lead-210, and polonium-210 concentrations in surface waters indicated that the uranium extraction facilities have caused elevated concentrations in the vicinity of the facilities but there have been insufficient data collected to allow speculation on the fate of these radioisotopes.

Quarterly measurements of strontium-90 have indicated that significantly high (up to 9.6 pci/l Sr-90) concentrations existed in the Basin prior to 1970 but that the strontium-90 content of the waters may have decreased since then. Again, limited measurements of strontium-90 since 1970 make this conclusion tentative. Strontium-90 is not associated with the uranium or uranium milling, but is derived from nuclear detonations and is transported by air until it is "scrubbed" to be precipitated as "fallout". The Network did detect higher strontium-90 concentration in the San Juan River ("upstream of Mexican Hat, Utah") than were generally found in the upper Colorado River Basin ("upstream of Moab, Utah").

RECOMMENDATIONS

Since the RMN system has been the recent subject of discussions regarding the amount of surface water quality monitoring that the Environmental Protection Agency should perform or support, the following recommendations pertaining to the future role of the Network are offered.

1. The RMN system in the Colorado River should be maintained to include a minimum of seventeen stations with approximately five stations added for about one year to monitor changes in concentrations and any increase in uranium extraction activity. Stations upstream of Bedrock on the Dolores River and possibly in the vicinity of the new mill at LaSal may be needed. Stations may include ground water sampling.

2. The RMN system should be expanded to include areas of uranium extraction, milling, and refining in Wyoming and to include uranium milling in South Dakota.

3. The RMN system should collect composite samples (over varying frequencies) whenever possible so as to provide true average concentrations.

4. Radioassay of samples collected downstream of operating mills and mines must be as fast as possible to provide detection of spills. In situ methods of measurement must be further evaluated.

5. In addition to radium and uranium analysis, selected samples should be routinely analyzed for ammonia, "trace" elements, and solids. These analyses should continue until correlations have either been derived or are not apparent.

6. An intensive effort to characterize the chemical and physical forms of effluents from uranium mills should be initiated to provide quantitative data on the fate of contaminants.

7. Shallow wells should be installed down-gradient of selected uranium tailings piles and along gaining reaches of streams to evaluate the contribution of radium-226 from these sources.

APPENDIX

RADIOLOGICAL MONITORING NETWORK STATION DESCRIPTIONS, LOCATIONS (MAPS), AND RESULTS OF RADIUM-226 (DISSOLVED) AND TOTAL URANIUM (DISSOLVED) RADIOASSAY.

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EXPLANATION OF MATERIAL CONTAINED IN APPENDIX

The data tables for each PMN station are preceeded by a description of the station location and the sampling history, and a map showing the sampling location(s). The two map symbols used are:

● Present or most recent sampling location

▲ Previous sampling location

The format on each data table is as follows:

070022 (STORET number)
39 32 30.0 107 38 40.0 (lat., long.)
Colorado River at Silt
Colorado } (site description)
.....

(parameter code)

Date From To	Time of Day	Depth Feet	09503 Ra-226 DISSOLVED PC/L	09504 Ra-226-D ERROR PC/L	22703 U-NAD DISSOLVED µG/L
61/11/25 (begin)					
CP(T)-02 (composite in time with 2 samples composited)					
61/12/02 (end)		COMP (composite)	0.270 (10^{-12}ci/l)	0.020 ($\pm 10^{-12}$ci/l)	3.500 (10^{-6}gm/l)

STATION DESCRIPTION

(RMN-1)

070022
39 32 30.0 107 38 40.0
COLORADO RIVER AT SILT
08 COLORADO
COLORADO RIVER BASIN
UPPER COLORADO RIVER SUB BASIN
1118C030 2111204
2 0000 FEET DEPTH

RIVER SYSTEM
INDEX 1101001
MILES 1179.30

II III IV V VI VII VIII IX X XI XII

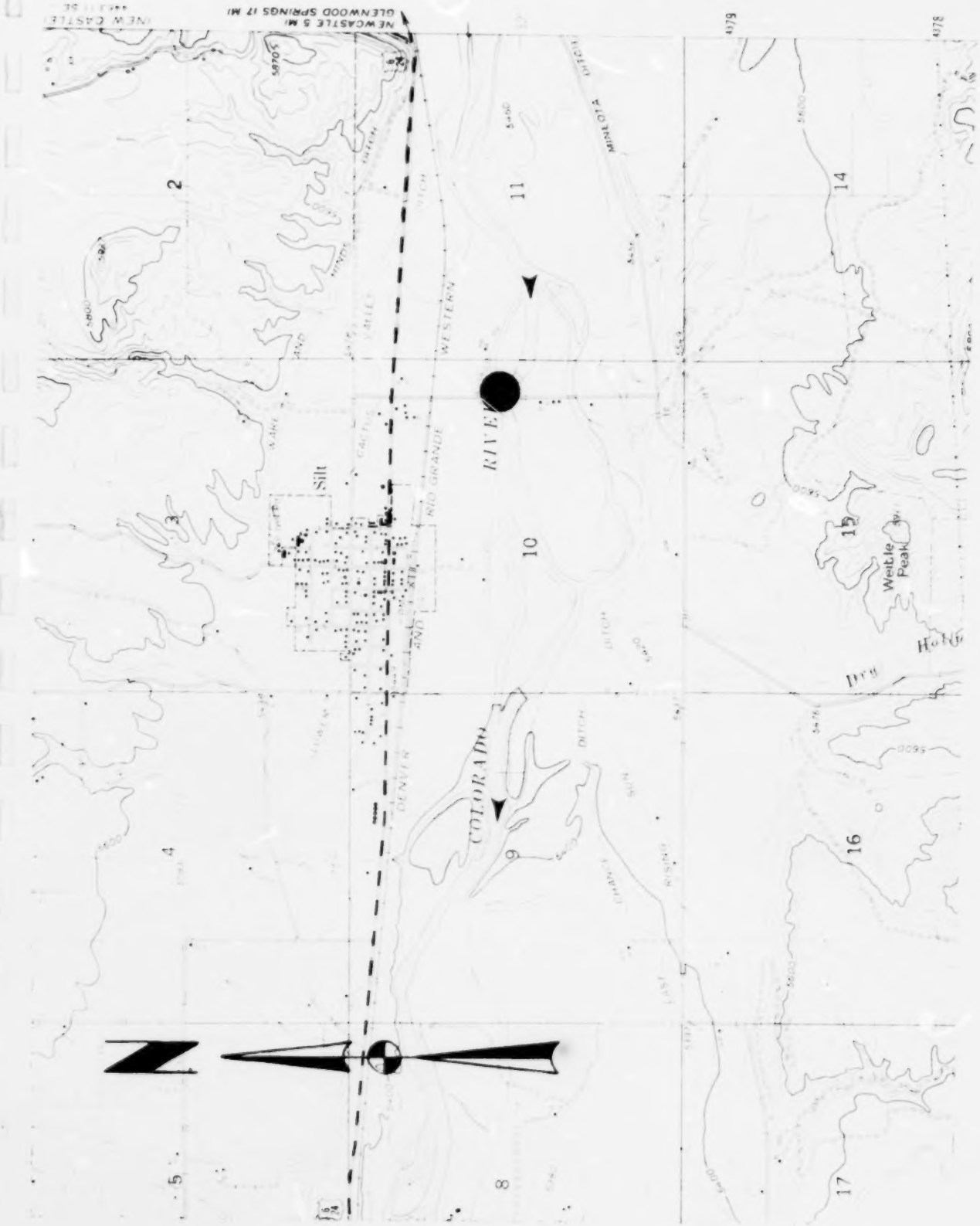
DESCRIPTION

CRRP NO. RMN-1, UMS-6, HWS-9
SE1/4, NE1/4, SEC 10, T6S, R92W

SAMPLE COLLECTED IN MAIN CHANNEL 1/2 MILE SOUTHEAST OF SILT COLO., IN GARFIELD COUNTY, JUST UPSTREAM OF BRIDGE ON STATE ROUTE 330.
TYPE DATA-RAD, SAL, BACT.
TYPE FLOW MEAS-WIR STG AT 09087600 PLUS WEST DIVIDE CREEK
SAMPLING STARTED 11/25/61 AND IS ONGOING.
REMARKS: RADIUM BEARING MINERAL SPRINGS ENTER THE RIVER ABOUT 20 MI. UPS AT GLENWOOD SPRINGS, COLO. THIS STATION PROVIDES BACKGROUND RADIOACTIVTY DATA ABOVE URANIUM MILL 8 MILES DOWNSTREAM AT RIFLE, COLORADO

Number of Samples assayed for Ra-226 through period of record (1961-1972): 130
Mean Ra-226 concentration for period of record and 2σ deviation : 0.19 ± 0.16

Number of Samples assayed for U(total) through period of record (1962-1972): 116
Mean U(total) concentration for period of record and 2σ deviation : 2.91 ± 3.00



STATION LOCATION
(FMN-1)

TABLE A-1

(RMN-1)

070022
39 32 30.0 107 38 40.0
COLORADO RIVER AT SILT
08 COLORADO
COLORADO RIVER BASIN
UPPER COLORADO RIVER SUB BASIN
1118C030 2111204
2 0000 FEET DEPTH

DATE FROM TO	TIME OF DAY	DEPTH FEET	09503 RA-226 DISOLVED PC/L	09504 RA-226-D ERROR PC/L	22703 U-NAT DISOLVED UG/L
61/11/25			0.190		
61/12/02		COMP			
61/12/02			0.170		
61/12/09		COMP			
61/12/09			0.180		
61/12/16		COMP			
61/12/16			0.150		
61/12/23		COMP			
61/12/23			0.310		
61/12/30		COMP			
62/02/18			0.150		
62/02/24		COMP			
62/02/24			0.160		
62/03/03		COMP			
62/03/03			0.140		
62/03/31		COMP			
62/03/31			0.130		
62/04/28		COMP			
62/04/28			0.040		
62/06/03		COMP			
62/06/03			0.050		
62/06/30		COMP			
62/06/30			0.110		
62/07/28		COMP			
62/07/28			0.170		
62/09/01		COMP			
62/09/01			0.200		
62/09/29		COMP			
62/09/29			0.180		3.300
62/11/03		COMP			
62/11/03			0.190		3.200
62/12/01		COMP			
62/12/01			0.250		3.600
62/12/29		COMP			
62/12/29			0.260		3.100
63/02/02		COMP			
63/02/02			0.280		3.000
63/03/02		COMP			
63/03/02			0.230		3.900
63/03/30		COMP			
63/03/30			0.230		2.600
63/04/27		COMP			
63/04/27			0.100		0.100
63/06/01		COMP			
63/06/01			0.130		0.800
63/06/29		COMP			
63/06/29			0.200		2.300
63/08/03		COMP			
63/08/03			0.200		3.900
63/08/31		COMP			
63/08/31			0.290		2.900
63/09/28		COMP			
63/09/28			0.250		3.000
63/11/02		COMP			
63/11/02			0.290		3.400
63/12/07		COMP			
63/12/07			0.340		4.400
63/12/28		COMP			
63/12/28			0.350		3.400
64/02/01		COMP			
64/02/01			0.390		2.700
64/02/29		COMP			
64/02/29			0.340		3.200
64/03/28		COMP			
64/03/28			0.180		3.500
64/05/02		COMP			
64/05/02			0.110		1.500
64/05/30		COMP			
64/05/30			0.080		1.200
64/06/27		COMP			
64/06/27			0.150		2.700
64/08/01		COMP			
64/08/01			0.190		2.200
64/08/29		COMP			
64/08/29			0.240		2.900
64/10/03		COMP			
64/10/03			0.270		3.500
64/10/31		COMP			
64/10/31			0.330		3.900
64/11/28		COMP			

TABLE A-1(Cont.)

(RMN-1)

070022
39 32 30.0 107 38 40.0
COLORADO RIVER AT SILT
08 COLORADO
COLORADO RIVER BASIN
UPPER COLORADO RIVER SUB BASIN
1118C030 2111204
2 0000 FEET DEPTH

DATE FROM TO	TIME OF DAY	DEPTH FEET	09503 RA-226 DISOLVED PC/L	09504 RA-226-D ERROR PC/L	22703 U-NAT DISOLVED UG/L
64/11/28			0.270		4.300
65/01/02		COMP			
65/01/02			0.270		3.700
65/01/30		COMP			
65/01/30			0.290		3.600
65/02/27		COMP			
65/02/23			0.250		3.500
65/04/03		COMP			
65/04/03			0.140		3.200
65/05/01		COMP			
65/05/01			0.080		1.900
65/05/29		COMP			
65/05/29			0.090		2.200
65/07/03		COMP			
65/07/03			0.060		2.800
65/07/30		COMP			
65/07/30			0.130		1.500
65/08/27		COMP			
65/08/27			0.110		3.900
65/10/02		COMP			
65/10/02			0.150		4.200
65/10/29		COMP			
65/10/29			0.180		3.600
65/11/27		COMP			
65/11/27			0.180		3.000
66/01/02		COMP			
66/01/02			0.210		1.900
66/01/29		COMP			
66/01/29			0.180		2.100
66/02/27		COMP			
66/02/27			0.150		0.000
66/04/02		COMP			
66/04/02			0.140		1.900
66/04/30		COMP			
66/04/30			0.080		0.700
66/05/27		COMP			
66/05/27			0.110		1.200
66/07/02		COMP			
66/07/02			0.180		2.300
66/07/30		COMP			
66/07/30			0.240		2.600
66/08/26		COMP			
66/09/03			0.220		2.700
66/10/01		COMP			
66/10/01			0.250		2.900
66/10/29		COMP			
66/10/29			0.270		2.900
66/12/03		COMP			
66/12/03			0.290		3.200
66/12/30		COMP			
66/12/30			0.280		3.200
67/01/28		COMP			
67/02/04			0.250		3.100
67/02/25		COMP			
67/02/25			0.200		4.000
67/04/01		COMP			
67/04/01			0.150		2.200
67/04/29		COMP			
67/04/29			0.100		1.500
67/05/27		COMP			
67/05/27			0.060		1.200
67/07/01		COMP			
67/07/01			0.130		1.800
67/07/29		COMP			
67/07/29			0.210		2.900
67/09/02		COMP			
67/09/02			0.210		3.700
67/09/30		COMP			
67/09/30			0.240		3.000
67/10/28		COMP			
67/10/28			0.250		4.200
67/12/02		COMP			
67/12/02			0.260		3.400
67/12/23		COMP			
68/01/06			0.250		3.500
68/02/03		COMP			
68/02/03			0.230		3.200
68/03/02		COMP			
68/03/02			0.260		3.300
68/03/23		COMP			

TABLE A-1(Cont.)

(RMN-1)

DATE FROM TO	TIME OF DAY	DEPTH FEET	09503 RA-226 DISOLVED PC/L	09504 RA-226-D ERROR PC/L	22703 U-NAT DISOLVED UG/L
68/03/30			0.220		2.700
68/04/27		COMP			
68/04/27			0.080	0.010	0.800
68/06/01		COMP			
68/06/01			0.050	0.010	1.900
68/06/29		COMP			
68/07/01			0.130	0.020	2.700
68/07/29		COMP			
68/08/05	10 00				
(R(T)-02			0.100	0.010	1.600
68/08/19	10 00				
68/09/03			0.220	0.020	3.700
68/09/16		COMP			
68/09/30			0.230	0.020	4.900
68/10/28		COMP			
68/11/13			0.210	0.020	5.000
68/11/25		COMP			
68/12/09			0.260	0.020	5.300
69/01/13			0.270	0.030	4.300
69/02/10			0.230	0.020	3.200
69/03/10			0.260	0.020	3.400
69/04/07			0.140	0.020	4.200
69/05/05			0.060	0.010	2.400
69/06/09			0.060	0.010	1.300
69/07/07			0.100	0.010	2.600
69/08/27			0.190	0.020	3.400
69/09/25			0.200	0.020	4.000
69/10/28			0.160	0.020	3.300
69/11/21			0.210	0.020	3.900
69/12/23			0.150	0.020	4.700
70/01/27			0.450	0.040	4.400
70/02/25			0.150	0.020	3.400
70/03/24			0.210	0.020	3.600
70/04/22			0.140	0.020	3.100
70/05/22			0.060	0.010	1.400
70/06/24			0.020	0.010	1.000
70/07/28			0.120	0.020	4.200
70/08/26			0.150	0.020	2.000
70/09/23			0.150	0.020	2.800

070022
39 32 30.0 107 38 40.0
COLORADO RIVER AT SILT
08 COLORADO
COLORADO RIVER BASIN
UPPER COLORADO RIVER SUB BASIN
1118C030 2111204
2 0000 FEET DEPTH

DATE FROM TO	TIME OF DAY	DEPTH FEET	09503 RA-226 DISOLVED PC/L	09504 RA-226-D ERROR PC/L	22703 U-NAT DISOLVED UG/L
70/10/21			0.180	0.020	3.200
70/11/24			0.160	0.020	2.600
70/12/15			0.200	0.020	1.900
71/01/25			0.220	0.030	2.700
71/02/22			0.210	0.020	1.800
71/03/23			0.120	0.020	2.400
71/04/20			0.070	0.010	3.900
71/05/20			0.050	0.010	1.000
71/06/15			0.040	0.010	0.800
71/07/26			0.180		1.200
71/08/23			0.200		1.100
71/09/27			0.300		2.200
71/10/18			0.200		2.400
71/11/29			0.200		4.600
71/12/13			0.300		14.000
72/01/29			0.200		1.900
72/02/22			0.100		2.800
72/03/20			0.200		1.900
72/05/15			0.200		3.300
72/06/19			0.100K		2.800

STATION DESCRIPTION

(RMN-4)

070023
39 21 45.0 108 08 50.0
COLORADO RIVER AT DEBEQUE
08 COLORADO
COLORADO RIVER BASIN
UPPER COLORADO RIVER SUB BASIN
1118C030 2111204
2 0000 FEET DEPTH

RIVER SYSTEM II III IV V VI VII VIII IX X XI XII
INDEX 1101001
MILES 1138.45

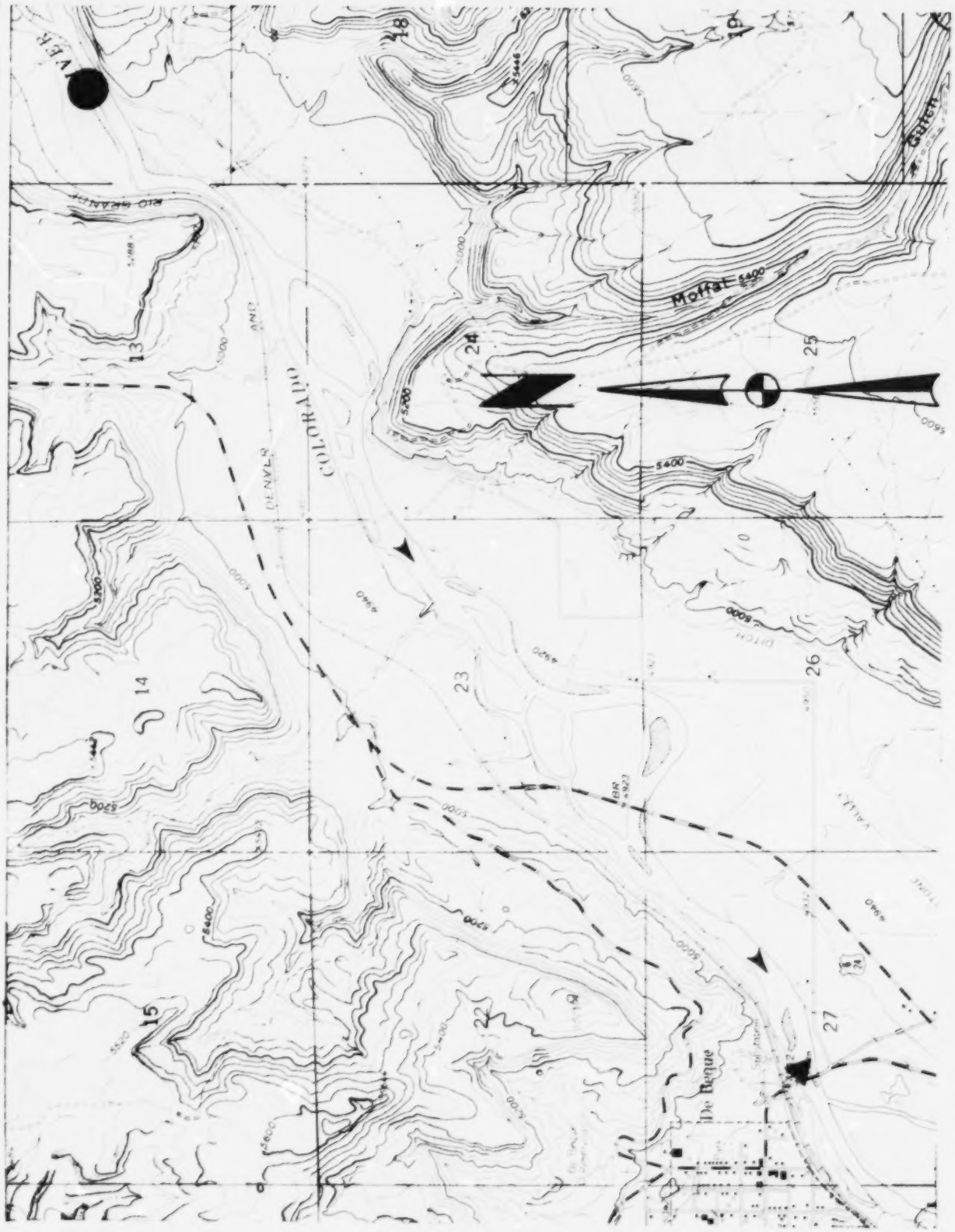
DESCRIPTION

CRBP NO. RMN-4. RBS-12. UMS-7
SE1/4. NW1/4. SEC 7. 10S. R96W

SAMPLED AT DE BEQUE MUNICIPAL WATER SUPPLY INFILLTRATION GALLERY IN MESA COUNTY UNTIL 07/69I NOW SAMPLED 3.8MI NORTHEAST. UPS. OF DE BEQUE
TYPE DATA-RAD. SAL
TYPE FLOW MEAS-WTR STG REC AT 09093700
SAMPLING STARTED 11/12/61 AND IS ONGOING.
REMARKS: THE UNION CARBIDE CORP. MILL AT RIFLE RELEASES LIQUID WASTES FROM ITS SEEPAGE EVAPORATION LAGOONS TO RIVER 30MI. UPSTREAM. A SECOND URANIUM MILL AT RIFLE. CLOSED 1968. CONTRIBUTES LITTLE RADIOACTIVITY.

Number of Samples assayed for Ra-226 through period of record (1961-1972): 130
Mean Ra-226 concentration for period of record and 2σ deviation : 0.17 ± 0.12

Number of Samples assayed for U(total) through period of record (1962-1972): 115
Mean U(total) concentration for period of record and 2σ deviation : 3.60 ± 2.92



STATION LOCATION

(RM4-4)

TABLE A-2

(RMN-4)

070023
39 21 45.0 108 08 50.0
COLORADO RIVER AT DEBEQUE
08 COLORADO
COLORADO RIVER BASIN
UPPER COLORADO RIVER SUB BASIN
1118C030 2111204
2 0000 FEET DEPTH

DATE FROM TO	TIME OF DAY	DEPTH FEET	09503 RA-226 DISOLVED PC/L	09504 RA-226-D ERROR PC/L	22703 U-NAT DISOLVED UG/L
61/11/12			0.230		
61/11/18		COMP			
61/11/18			0.190		
61/11/25		COMP			
61/11/25			0.170		
61/12/02		COMP			
62/02/04			0.150		
62/02/03		COMP			
62/02/18			0.150		
62/02/24		COMP			
62/03/03			0.140		
62/03/31		COMP			
62/03/31			0.100		
62/04/28		COMP			
62/04/28			0.090		
62/06/03		COMP			
62/06/03			0.050		
62/06/30		COMP			
62/06/30			0.090		
62/07/28		COMP			
62/07/28			0.170		
62/09/01		COMP			
62/09/01			0.180		
62/09/08		COMP			
62/09/08			0.240		
62/09/15		COMP			
62/09/15			0.190		
62/09/22		COMP			
62/09/22			0.230		
62/09/29		COMP			
62/09/29			0.150		6.500
62/11/03		COMP			
62/11/03			0.190		4.500
62/12/01		COMP			
62/12/01			0.260		4.200
62/12/29		COMP			
62/12/29			0.440		4.300
63/02/02		COMP			
63/02/02			0.240		4.400
63/03/02		COMP			
63/03/03			0.240		5.100
63/03/30		COMP			
63/03/30			0.200		3.200
63/04/27		COMP			
63/04/27			0.160		0.400
63/06/01		COMP			
63/06/01			0.150		0.700
63/06/29		COMP			
63/06/29			0.240		2.500
63/08/03		COMP			
63/08/03			0.160		3.300
63/08/31		COMP			
63/08/31			0.150		3.600
63/09/28		COMP			
63/09/28			0.210		4.200
63/11/02		COMP			
63/11/02			0.240		4.200
63/12/07		COMP			
63/12/07			0.300		5.500
63/12/28		COMP			
63/12/28			0.260		4.500
64/02/01		COMP			
64/02/01			0.310		4.500
64/02/29		COMP			
64/02/29			0.290		4.400
64/03/28		COMP			
64/03/28			0.240		2.900
64/05/02		COMP			
64/05/02			0.150		1.800
64/05/30		COMP			
64/05/30			0.080		1.300
64/06/27		COMP			
64/06/27			0.140		2.900
64/08/01		COMP			
64/08/01			0.150		3.200
64/08/29		COMP			
64/08/29			0.200		3.700
64/10/03		COMP			
64/10/03			0.250		4.600
64/10/31		COMP			

TABLE A-2(Cont.)

(RMN-4)

DATE FROM TO	TIME OF DAY	DEPTH FEET	09503 RA-226 DISOLVED PC/L	09504 RA-226-D ERROR PC/L	22703 U-NAT DISOLVED UG/L
64/10/31			0.250		7.200
64/11/28		COMP			
64/11/28			0.280		5.800
65/01/02		COMP			
65/01/02			0.250		5.300
65/01/30		COMP			
65/01/30			0.250		4.900
65/02/27		COMP			
65/02/28			0.240		3.500
65/04/03		COMP			
65/04/03			0.160		2.900
65/05/01		COMP			
65/05/01			0.090		1.900
65/05/29		COMP			
65/05/29			0.130		2.200
65/07/03		COMP			
65/07/03			0.060		3.000
65/07/30		COMP			
65/07/30			0.140		2.300
65/08/28		COMP			
65/08/28			0.150		4.600
65/10/02		COMP			
65/10/02			0.130		4.000
65/10/30		COMP			
65/10/30			0.200		2.300
65/11/27		COMP			
65/11/27			0.190		2.500
66/01/02		COMP			
66/01/02			0.200		4.700
66/01/29		COMP			
66/01/29			0.200		2.900
66/02/27		COMP			
66/02/27			0.140		0.600
66/04/02		COMP			
66/04/02			0.140		2.600
66/04/30		COMP			
66/04/30			0.090		0.700
66/05/27		COMP			
66/05/27			0.120		2.000
66/07/02		COMP			

070023
39 21 45.0 108 08 50.0
COLORADO RIVER AT DEBEQUE
08 COLORADO
COLORADO RIVER BASIN
UPPER COLORADO RIVER SUB BASIN
1118C030 2111204
2 0000 FEET DEPTH

DATE FROM TO	TIME OF DAY	DEPTH FEET	09503 RA-226 DISOLVED PC/L	09504 RA-226-D ERROR PC/L	22703 U-NAT DISOLVED UG/L
66/07/01			0.160		4.000
66/07/30		COMP			
66/07/30			0.200		3.400
66/09/03		COMP			
66/09/03			0.220		2.600
66/10/01		COMP			
66/10/01			0.210		3.300
66/10/29		COMP			
66/10/29			0.230		3.300
66/12/03		COMP			
66/12/03			0.230		4.300
66/12/30		COMP			
66/12/30			0.250		4.400
67/01/28		COMP			
67/02/04			0.210		5.900
67/02/25		COMP			
67/02/25			0.230		4.000
67/04/01		COMP			
67/04/01			0.180		2.600
67/04/29		COMP			
67/04/29			0.130		1.900
67/06/03		COMP			
67/06/03			0.080		1.400
67/07/01		COMP			
67/07/01			0.140		2.200
67/07/29		COMP			
67/07/29			0.200		4.100
67/09/02		COMP			
67/09/02			0.210		5.000
67/09/30		COMP			
67/09/30			0.210		5.800
67/10/28		COMP			
67/10/28			0.220		5.800
67/12/02		COMP			
67/12/02			0.240		6.000
67/12/30		COMP			
67/12/30			0.250		5.500
68/02/03		COMP			
68/02/03			0.230		4.600
68/03/02		COMP			

TABLE A-2(Cont.)

(RMN-4)

070023
39 21 45.0 108 08 50.0
COLORADO RIVER AT DEBEQUE
08 COLORADO
COLORADO RIVER BASIN
UPPER COLORADO RIVER SUB BASIN
1118C030 2111204
2 0000 FEET DEPTH

DATE FROM TO	TIME OF DAY	DEPTH FEET	09503 RA-226 DISOLVED PC/L	09504 RA-226-D ERROR PC/L	22703 U-NAT DISOLVED UG/L
68/03/02			0.220		4.700
68/03/23		COMP			
68/03/30			0.190		3.700
68/04/27		COMP			
68/04/27			0.120		1.500
68/06/01		COMP			
68/06/01			0.060	0.010	2.500
68/06/28		COMP			
68/07/01			0.120	0.020	2.900
68/07/29		COMP			
68/08/05			0.120	0.010	1.700
68/08/19		COMP			
68/09/03			0.190	0.020	3.700
68/09/16		COMP			
68/09/30			0.220	0.020	5.400
68/10/28		COMP			
68/11/13			0.210	0.020	6.600
68/11/25		COMP			
68/12/09			0.170	0.020	6.100
69/01/13			0.180	0.020	5.000
69/02/10			0.170	0.020	4.300
69/03/10			0.170	0.020	4.800
69/04/07			0.160	0.020	5.300
69/05/05			0.090	0.010	2.400
69/06/09			0.060	0.010	2.000
69/07/07			0.080	0.010	4.300
69/08/27			0.150	0.020	4.100
69/09/25			0.130	0.020	5.000
69/10/28			0.140	0.020	3.900
69/11/21			0.170	0.020	5.000
69/12/23			0.140	0.020	5.000
70/01/27			0.120	0.020	4.900
70/02/11			0.140	0.020	5.400
70/03/24			0.140	0.020	4.200
70/04/22			0.130	0.020	3.900
70/06/04			0.040	0.010	2.100
70/07/28			0.120	0.020	4.700
70/09/11			0.130	0.020	4.300
70/10/06			0.100	0.020	3.200
70/10/23			0.110	0.020	4.200
70/11/24			0.120	0.020	2.600
70/12/18			0.120	0.020	2.500
71/01/29			0.140	0.020	3.500
71/02/24			0.110	0.020	2.900
71/03/23			0.120	0.020	3.000
71/04/20			0.210	0.020	1.800
71/05/17			0.080	0.010	1.000
71/06/17			0.050	0.010	0.100
71/07/30			0.160		2.000
71/08/25			0.200		2.100
71/09/30			0.200		2.900
71/10/20			0.200		4.100
71/12/15			0.200		4.800
72/01/27			0.200		3.300
72/02/16			0.200		2.200
72/03/22			0.200		3.500
72/04/17			0.200		1.800
72/05/17			0.200		3.300
72/06/21			0.100K		3.300

STATION DESCRIPTION

(RMN-5)

070002
39 02 45.0 108 34 30.0
GUNNISON RIVER AT GRAND JUNCTION
08 COLORADO
COLORADO RIVER BASIN
UPPER COLORADO RIVER SUB BASIN
1118C030 2111204
2 0000 FEET DEPTH

	RIVER SYSTEM	II	III	IV	V	VI	VII	VIII	IX	X	XI	XII
INDEX	1101001	012680										
MILES	1101.80	0001.20	.	.	.	.	.	.	.	.	.	.

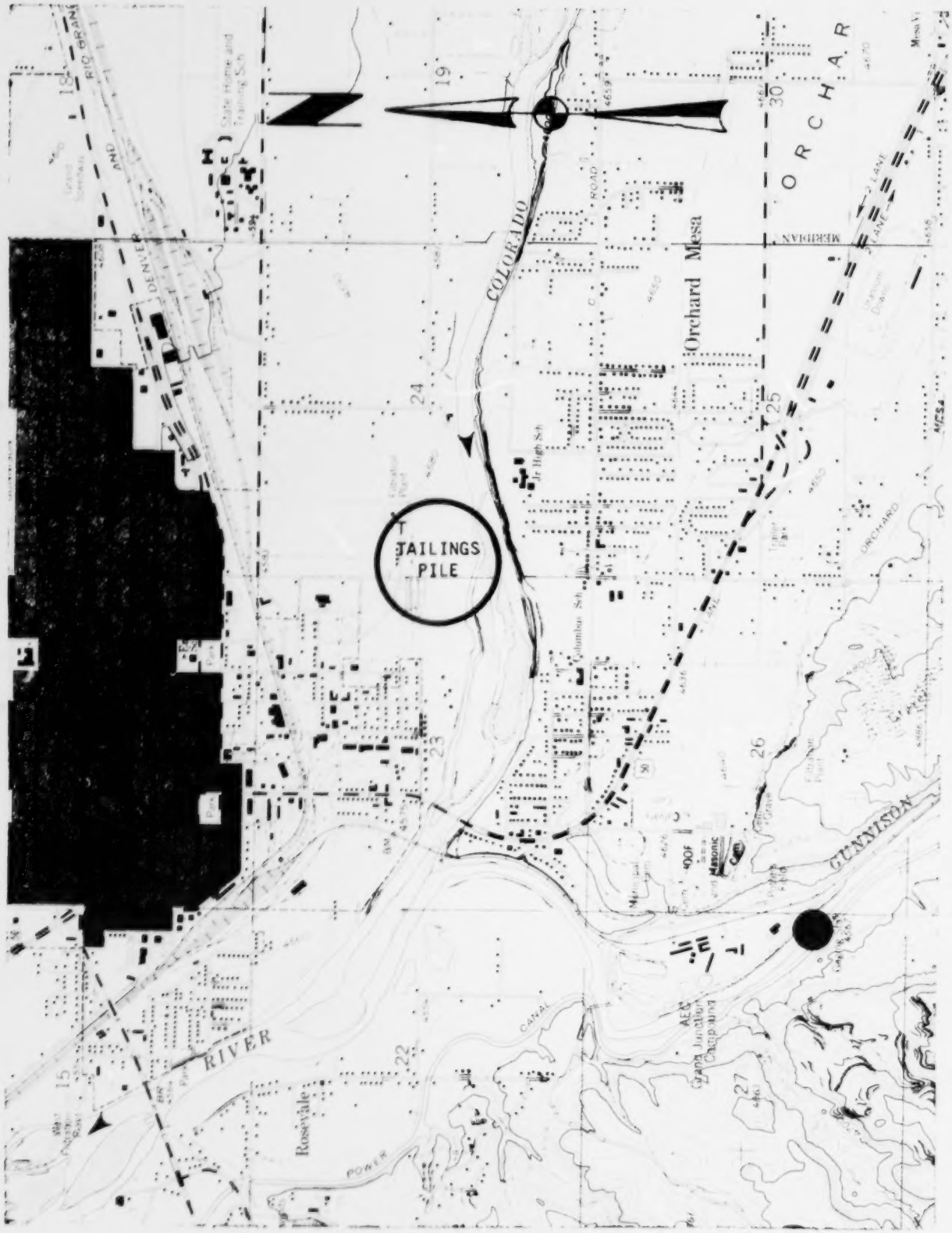
DESCRIPTION

CRBP NO. RMN-5, USGS-09-152500, BWS-14
NW1/4, NE1/4, SEC 27, T1S, R1W

SAMPLED AT COUNTY ROAD BRIDGE 1.2 MILES UPSTREAM FROM THE MOUTH OF THE GUNNISON RIVER IN MESA COUNTY.
TYPE DATA-RAD, BACT.: GRAB, 3 PINTS/WEEK
TYPE FLOW MEAS-WTR STG REC AT 09152500
SAMPLING STARTED 4/16/62 AND DISCONTINUED 05/19/72
REMARKS: A URANIUM MILL, CLOSED IN 1962, IS LOCATED 150MI. UPSTREAM BUT DOES NOT CONTRIBUTE ANY RADIOACTIVITY. THE MILL HAD NO DIRECT WASTE DISCHARGES DURING OPERATION. NATURAL PICK-UP FROM GUNNISON TO STATION

Number of Samples assayed for Ra-226 through period of record (1961-1972): 103
Mean Ra-226 concentration for period of record and 2σ deviation : 0.09 ± 0.10

Number of Samples assayed for U(total) through period of record (1962-1972): 94
Mean U(total) concentration for period of record and 2σ deviation : 9.57 ± 8.49



STATION LOCATION
(RMN-5)

TABLE A-3

(RMN-5)

070002
39 02 45.0 108 34 30.0
GUNNISON RIVER AT GRAND JUNCTION
08 COLORADO
COLORADO RIVER BASIN
UPPER COLORADO RIVER SUB BASIN
1118C030 2111204
2 0000 FEET DEPTH

DATE FROM TO	TIME OF DAY	DEPTH FEET	09503 RA-226 DISOLVED PC/L	09504 RA-226-D ERROR PC/L	22703 U-NAT DISOLVED UG/L
62/04/16			0.040		
62/04/28		COMP			
62/04/30			0.070		
62/06/02		COMP			
62/06/04			0.040		
62/06/30		COMP			
62/07/02			0.040		
62/07/28		COMP			
62/07/30			0.090		
62/09/01		COMP			
62/09/03			0.100		
62/09/08		COMP			
62/09/10			0.100		
62/09/15		COMP			
62/09/17			0.100		
62/09/22		COMP			
62/09/24			0.080		
62/09/29		COMP			
62/10/01			0.050		12.000
62/11/03		COMP			
62/11/05			0.040		13.000
62/12/01		COMP			
62/12/03			0.070		13.000
62/12/29		COMP			
62/12/31			0.040		13.000
63/02/02		COMP			
63/02/04			0.010		10.000
63/03/02		COMP			
63/03/30			0.080		10.000
63/03/30		COMP			
63/04/01			0.090		4.700
63/04/27		COMP			
63/04/29			0.060		2.900
63/06/01		COMP			
63/06/01			0.080		0.700
63/06/29		COMP			
63/07/01			0.290		12.000
63/08/02		COMP			
63/08/05			0.190		14.000
63/08/30		COMP			
63/09/02			0.190		17.000
63/09/27		COMP			
63/09/30			0.120		15.000
63/11/01		COMP			
63/11/04			0.040		13.000
63/11/29		COMP			
63/12/02			0.100		14.000
63/12/27		COMP			
63/12/30			0.080		12.000
64/01/31		COMP			
64/02/03			0.080		11.000
64/02/28		COMP			
64/03/02			0.080		12.000
64/03/27		COMP			
64/03/30			0.100		4.400
64/05/01		COMP			
64/05/04			0.090		
64/05/29		COMP			
64/06/01			0.290		4.000
64/06/26		COMP			
64/06/29			0.160		8.900
64/07/31		COMP			
64/08/03			0.150		10.000
64/08/28		COMP			
64/08/31			0.10		14.000
64/10/02		COMP			
64/10/04			0.110		300
64/10/30		COMP			
64/11/02			0.090		17.000
64/11/27		COMP			
64/11/30			0.100		14.000
65/01/01		COMP			
65/01/04			0.110		13.000
65/01/29		COMP			
65/02/01			0.090		11.000
65/02/26		COMP			
65/03/01			0.060		9.400
65/04/02		COMP			
65/04/05			0.090		4.000
65/04/30		COMP			

TABLE A-3 (Cont)

(RMN-5)

DATE FROM TO	TIME OF DAY	DEPTH FEET	09503 RA-226 DISOLVED PC/L	09504 RA-226-D ERROR PC/L	22703 U-NAT DISOLVED UG/L
65/05/03			0.060		2.600
65/05/28		COMP			
65/05/31			0.080		4.600
65/07/02		COMP			
65/07/05			0.090		3.600
65/07/30		COMP			
65/08/02			0.040		6.900
65/08/27		COMP			
65/08/30			0.040		9.700
65/10/01		COMP			
65/10/04			0.030		12.000
65/10/29		COMP			
65/11/01			0.040		15.000
65/11/26		COMP			
65/11/29			0.090		12.000
65/12/31		COMP			
66/01/03			0.080		18.000
66/01/28		COMP			
66/01/31			0.050		14.000
66/02/25		COMP			
66/02/28			0.050		9.000
66/04/01		COMP			
66/04/04			0.080		4.400
66/04/29		COMP			
66/05/02			0.060		5.300
66/05/27		COMP			
66/05/30			0.100		7.600
66/07/01		COMP			
66/07/04			0.100		12.000
66/07/29		COMP			
66/08/01			0.190		14.000
66/09/12		COMP			
66/09/05			0.120		14.000
66/09/30		COMP			
66/10/03			0.110		14.000
66/10/28		COMP			
66/10/31			0.050		5.400
66/12/02		COMP			
66/12/05			0.080		12.000
66/12/30		COMP			

070002
39 02 45.0 108 34 30.0
GUNNISON RIVER AT GRAND JUNCTION
08 COLORADO
COLORADO RIVER BASIN
UPPER COLORADO RIVER SUB BASIN
1118C030 2111204
2 0000 FEET DEPTH

DATE FROM TO	TIME OF DAY	DEPTH FEET	09503 RA-226 DISOLVED PC/L	09504 RA-226-D ERROR PC/L	22703 U-NAT DISOLVED UG/L
67/01/02			0.040		15.000
67/01/27		COMP			
67/01/30			0.090		11.000
67/02/24		COMP			
67/02/27			0.060		9.100
67/03/31		COMP			
67/04/03			0.080		5.400
67/04/28		COMP			
67/05/01			0.060		4.800
67/05/26		COMP			
67/05/29			0.080		7.000
67/06/30		COMP			
67/07/03			0.120		14.000
67/07/28		COMP			
67/07/31			0.150		13.000
67/09/01		COMP			
67/09/04	10 00				
CP(T)-12			0.090		13.000
67/09/29	10 00				
67/10/02	10 00				
CP(T)-12			0.070	0.010	15.000
67/10/27	10 00				
67/10/30	10 00				
CP(T)-12			0.080	0.010	7.900
67/12/01	10 00				
67/12/04	10 00				
CP(T)-12			0.060	0.010	5.600
67/12/29	10 00				
68/01/01	10 00				
CP(T)-12			0.080	0.010	10.000
68/02/02	10 00				
68/02/05	10 00				
CP(T)-12			0.040	0.010	7.700
68/03/01	10 00				
68/03/04	10 00				
CP(T)-04			0.040	0.010	11.000
68/03/29	10 00				
68/04/01	10 00				
CP(T)-04			0.050	0.010	6.800
68/04/26	10 00				

TABLE A-3 (Cont.)

(RMN-5)

070002
39 02 45.0 108 34 30.0
GUNNISON RIVER AT GRAND JUNCTION
08 COLORADO
COLORADO RIVER BASIN
UPPER COLORADO RIVER SUB BASIN
1118C030 2111204
2 0000 FEET DEPTH

DATE FROM TO	TIME OF DAY	DEPTH FEET	09503 RA-226 DISOLVED PC/L	09504 RA-226-D ERROR PC/L	22703 U-NAT DISOLVED UG/L
68/04/29	10 00				
CP(T)-			0.050	0.010	3.400
68/05/31	10 00				
68/06/03	10 00				
CP(T)-12			0.040	0.010	5.100
68/06/28	10 00				
68/07/03			0.160	0.020	14.000
68/07/31		COMP			
68/08/07	10 00				
CP(T)-03			0.170	0.030	10.000
68/08/21	10 00				
68/09/05			0.090	0.010	15.000
68/09/18		COMP			
68/10/02			0.100	0.100	14.000
68/10/16		COMP			
68/11/15			0.090	0.010	8.900
68/11/27		COMP			
68/12/13			0.080	0.010	7.300
69/01/16			0.060	0.010	8.100
69/02/13			0.040	0.010	15.000
69/03/13			0.040	0.010	6.200
69/04/10			0.070	0.010	4.900
69/05/08			0.070	0.010	4.300
69/06/12			0.050	0.010	7.200
69/07/22			0.150	0.020	9.800
69/08/29			0.080	0.010	13.000
69/11/25			0.040	0.010	8.600
70/02/09			0.040	0.010	6.600
70/05/18			0.050	0.010	2.800
70/08/24			0.070	0.010	9.500
70/11/25			0.040	0.010	6.100
71/02/26			0.040	0.010	3.600
71/05/17			0.070	0.010	3.900
71/08/27			0.200		12.000
71/12/03			0.200		3.600
72/02/16			0.100K		7.200
72/05/19			0.100		5.900

STATION DESCRIPTION

(RMN-6)

070038
39 10 00.0 108 57 25.0
COLORADO RIVER NEAR FRUITA
08 COLORADO
COLORADO RIVER BASIN
UPPER COLORADO RIVER SUB BASIN
1118C030 2111204
2 0000 FEET DEPTH

RIVER SYSTEM II III IV V VI VII VIII IX X XI XII
INDEX 1101001
MILES 1091.10

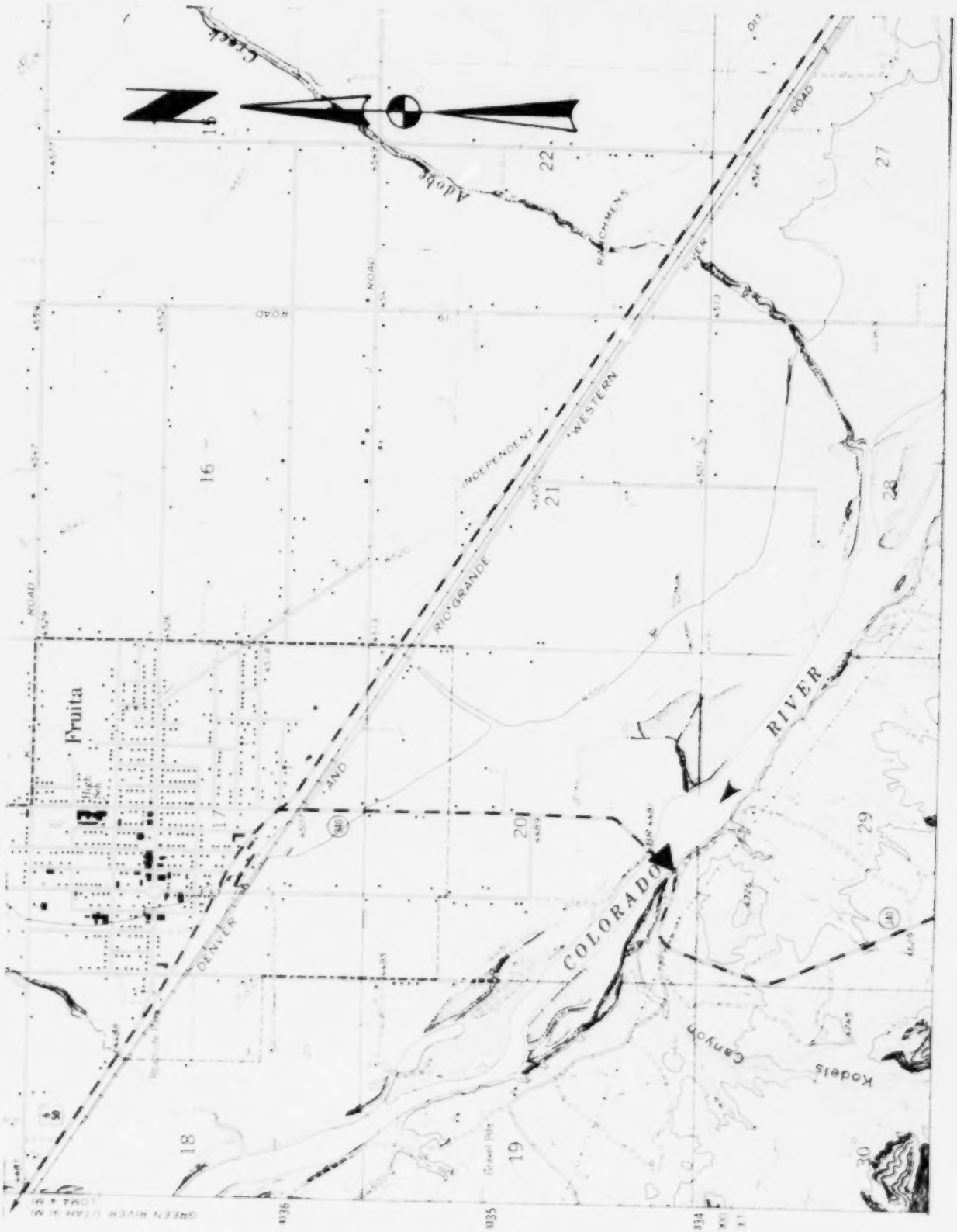
DESCRIPTION

CRSP NO. RMN-6. UMS-22
SE1/4. SE1/4. SEC 23. T10S. R104W

SAMPLED 1MI SOUTH OF FRUITA AT COLO. HWY 340 BRIDGE UNTIL 07/69; NOW
SAMPLED 7.2 MILES UPSTREAM FROM COLORADO-UTAH STATE LINE AT 09163500
TYPE DATA-RAD. SAL; GRAB. 3 PINTS/WEEK
TYPE FLOW MEAS-WTR STG REC AT 09163500
SAMPLING STARTED 4/16/62 AND IS ONGOING
REMARKS: THE CLIMAX URANIUM MILL AT GRAND JUNCTION. CLOSED IN 1970.
RELEASED SMALL AMOUNTS OF RADIOACTIVITY IN A MIXED LABORATORY-VANADIUM
PROCESS LIQUID WASTE EFFLUENT. THE MILL WAS UPSTREAM OF SAMPLING SITES

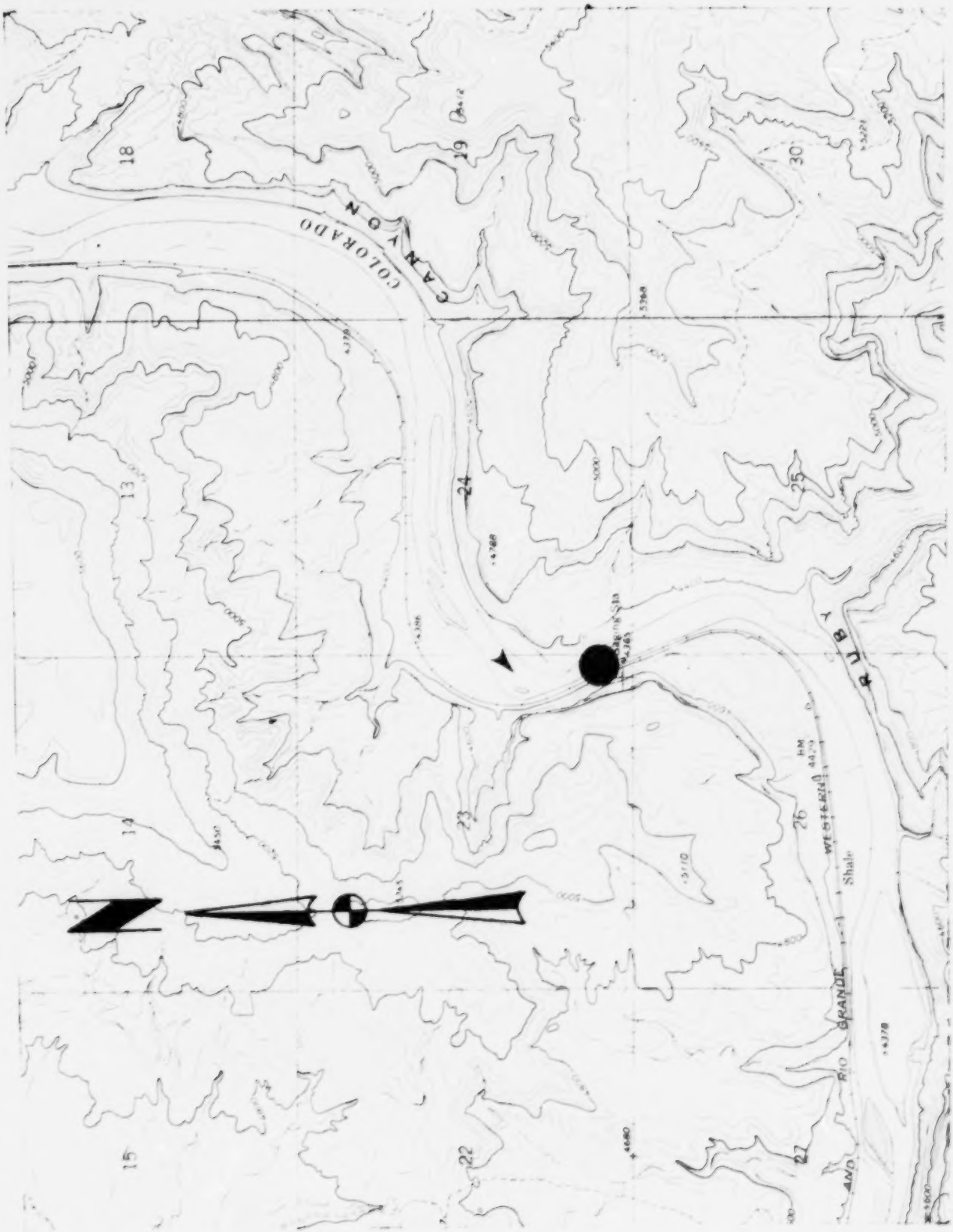
Number of Samples assayed for Ra-226 through period of record (1961-1972): 111
Mean Ra-226 concentration for period of record and 2σ deviation : 0.16 ± 0.14

Number of Samples assayed for U(total) through period of record (1962-1972): 102
Mean U(total) concentration for period of record and 2σ deviation : 7.88 ± 6.00



FORMER STATION LOCATION

(RMN-6)



STATION LOCATION

(RMW-6)

TABLE A-4

(RMN-6)

070038
39 10 00.0 108 57 25.0
COLORADO RIVER NEAR FRUITA
08 COLORADO
COLORADO RIVER BASIN
UPPER COLORADO RIVER SUB BASIN
1118C030 2111204
2 0000 FEET DEPTH

DATE FROM TO	TIME OF DAY	DEPTH FEET	09503 RA-226 DISOLVED PC/L	09504 RA-226-D ERROR PC/L	22703 U-NAT DISOLVED UG/L
62/04/16			0.120		
62/04/28		COMP			
62/04/30			0.130		
62/06/02		COMP			
62/06/04			0.090		
62/06/30		COMP			
62/07/02			0.200		
62/07/28		COMP			
62/07/30			0.210		
62/09/01		COMP			
62/09/03			0.260		
62/09/08		COMP			
62/09/10			0.190		
62/09/15		COMP			
62/09/17			0.210		
62/09/22		COMP			
62/09/24			0.180		
62/09/29		COMP			
62/10/01			0.140		8.500
62/11/03		COMP			
62/11/05			0.180		8.500
62/12/01		COMP			
62/12/03			0.180		10.000
62/12/29		COMP			
62/12/31			0.180		9.900
63/02/02		COMP			
63/02/04			0.130		9.500
63/03/02		COMP			
63/03/05			0.180		8.100
63/03/30		COMP			
63/04/01			0.140		6.200
63/04/27		COMP			
63/04/29			0.110		4.000
63/06/01		COMP			
63/06/03			0.140		4.700
63/06/29		COMP			
63/07/01			0.300		12.000
63/08/02		COMP			
63/08/05			0.240		12.000
63/09/30		COMP			
63/09/02			0.360		14.000
63/09/27		COMP			
63/09/30			0.330		14.000
63/11/01		COMP			
63/11/04			0.180		11.000
63/11/29		COMP			
63/12/02			0.210		13.000
63/12/27		COMP			
63/12/30			0.180		10.000
64/01/31		COMP			
64/02/03			0.190		9.200
64/02/28		COMP			
64/03/02			0.200		7.600
64/03/27		COMP			
64/03/30			0.100		10.000
64/05/01		COMP			
64/05/04			0.200		5.700
64/05/29		COMP			
64/06/01			0.160		3.200
64/06/26		COMP			
64/06/29			0.180		8.900
64/07/31		COMP			
64/08/03			0.150		8.800
64/08/28		COMP			
64/08/31			0.190		13.000
64/10/02		COMP			
64/10/05			0.180		14.000
64/10/30		COMP			
64/11/02			0.230		12.000
64/11/27		COMP			
64/11/30			0.180		14.000
65/01/01		COMP			
65/01/04			0.230		11.000
65/01/29		COMP			
65/02/01			0.210		9.100
65/02/26		COMP			
65/03/01			0.230		9.400
65/04/02		COMP			
65/04/05			0.150		4.600
65/04/30		COMP			

TABLE A-4 (Cont.)

(RMN-6)

070038
39 10 00.0 108 57 25.0
COLORADO RIVER NEAR FRUITA
08 COLORADO
COLORADO RIVER BASIN
UPPER COLORADO RIVER SUB BASIN
1118C030 2111204
2 0000 FEET DEPTH

DATE FROM TO	TIME OF DAY	DEPTH FEET	09503 RA-226 DISOLVED PC/L	09504 RA-226-D ERROR PC/L	22703 U-NAT DISOLVED UG/L
65/05/03			0.090		2.000
65/05/28		COMP			
65/05/31			0.110		3.300
65/07/02		COMP			
65/07/05			0.090		3.000
65/07/30		COMP			
65/08/02			0.130		6.400
65/08/27		COMP			
65/08/30			0.130		9.300
65/10/01		COMP			
65/10/04			0.140		10.000
65/10/29		COMP			
65/11/01			0.120		7.800
65/11/26		COMP			
65/11/29			0.390		8.100
65/12/31		COMP			
66/01/03			0.160		7.100
66/01/28		COMP			
66/02/02			0.120		6.000
66/02/25		COMP			
66/02/28			0.150		5.600
66/04/01		COMP			
66/04/04			0.110		4.700
66/04/30		COMP			
66/05/02			0.120		3.900
66/05/27		COMP			
66/05/30			0.150		5.000
66/07/01		COMP			
66/07/04			0.200		7.400
66/07/29		COMP			
66/08/01			0.190		9.800
66/09/02		COMP			
66/09/05			0.160		11.000
66/09/30		COMP			
66/10/03			0.160		12.000
66/10/28		COMP			
66/10/31			0.180		10.000
66/12/02		COMP			
66/12/05			0.160		9.400
66/12/30		COMP			
67/01/02			0.160		9.500
67/01/27		COMP			
67/01/30			0.160		9.000
67/02/24		COMP			
67/02/27			0.160		8.000
67/03/31		COMP			
67/04/03			0.120		6.200
67/04/28		COMP			
67/05/01			0.180		5.200
67/05/26		COMP			
67/05/29			0.160		3.900
67/06/30		COMP			
67/07/03			0.220		7.100
67/07/28		COMP			
67/07/31			0.280		11.000
67/09/01		COMP			
67/09/04			0.150		11.000
67/09/29		COMP			
67/10/02			0.170		14.000
67/10/27		COMP			
67/10/30			0.160		9.100
67/12/01		COMP			
67/12/04			0.130		7.300
67/12/29		COMP			
68/01/01			0.140		7.500
68/02/02		COMP			
68/02/05			0.130		8.100
68/03/01		COMP			
68/03/04			0.160		7.900
68/03/29		COMP			
68/04/01			0.150		6.600
68/04/26		COMP			
68/04/29			0.220	0.020	4.300
68/05/31		COMP			
68/06/03			0.090	0.010	3.900
68/06/28		COMP			
68/07/03			0.130	0.020	7.200
68/07/31		COMP			
68/08/07	10 00				
CP(T)-03			0.160	0.020	5.800
68/08/21	10 00				

TABLE A-4 (Cont.)

(RMN-6)

070038
39 10 00.0 108 57 25.0
COLORADO RIVER NEAR FRUITA
08 COLORADO
COLORADO RIVER BASIN
UPPER COLORADO RIVER SUB BASIN
1118C030 2111204
2 0000 FEET DEPTH

DATE FROM TO	TIME OF DAY	DEPTH FEET	09503 RA-226 DISOLVED PC/L	09504 RA-226-D ERROR PC/L	22703 U-NAT DISOLVED UG/L
68/09/05			0.130	0.020	11.000
68/09/18		COMP			
68/10/02			0.140	0.020	13.000
68/10/16		COMP			
68/11/15			0.130	0.020	9.100
68/11/27		COMP			
68/12/13			0.140	0.020	8.700
69/01/16			0.130	0.020	7.600
69/02/13			0.160	0.020	8.800
69/03/13			0.090	0.010	6.900
69/04/10			0.080	0.010	6.500
69/05/08			0.080	0.010	3.700
69/06/12			0.090	0.010	4.600
69/07/10			0.100	0.010	6.300
69/08/13			0.130	0.020	10.000
69/09/10			0.110	0.020	12.000
69/10/07			0.090	0.010	9.200
69/11/19			0.090	0.010	7.700
69/12/29			0.150	0.020	8.200
70/01/20			0.090	0.020	7.800
70/02/10			0.100	0.020	7.700
70/03/11			0.110	0.020	6.200
70/04/09			0.110	0.020	6.300
70/05/05			0.110	0.020	5.700
70/08/14			0.090	0.010	8.200
70/11/11			0.090	0.020	6.100
70/11/17			0.500	0.040	3.000
70/11/18			0.450	0.040	5.600
71/02/10			0.070	0.010	4.000
71/06/02			0.090	0.020	2.200
71/09/13			0.200		6.100
71/11/16			0.100K		1.700
72/02/15			0.100		4.100
72/05/30			0.200		5.400

STATION DESCRIPTION

(RMN-9)

490010
38 36 30.0 109 34 45.0
COLO R AT HWY 160 NORTH OF MOAB
49 UTAH
COLORADO RIVER BASIN
UPPER COLORADO RIVER SUB BASIN
111HC030 2111204
2 0000 FEET DEPTH

RIVER SYSTEM II III IV V VI VII VIII IX X XI XII
INDEX 1101001
MILES 0995.10

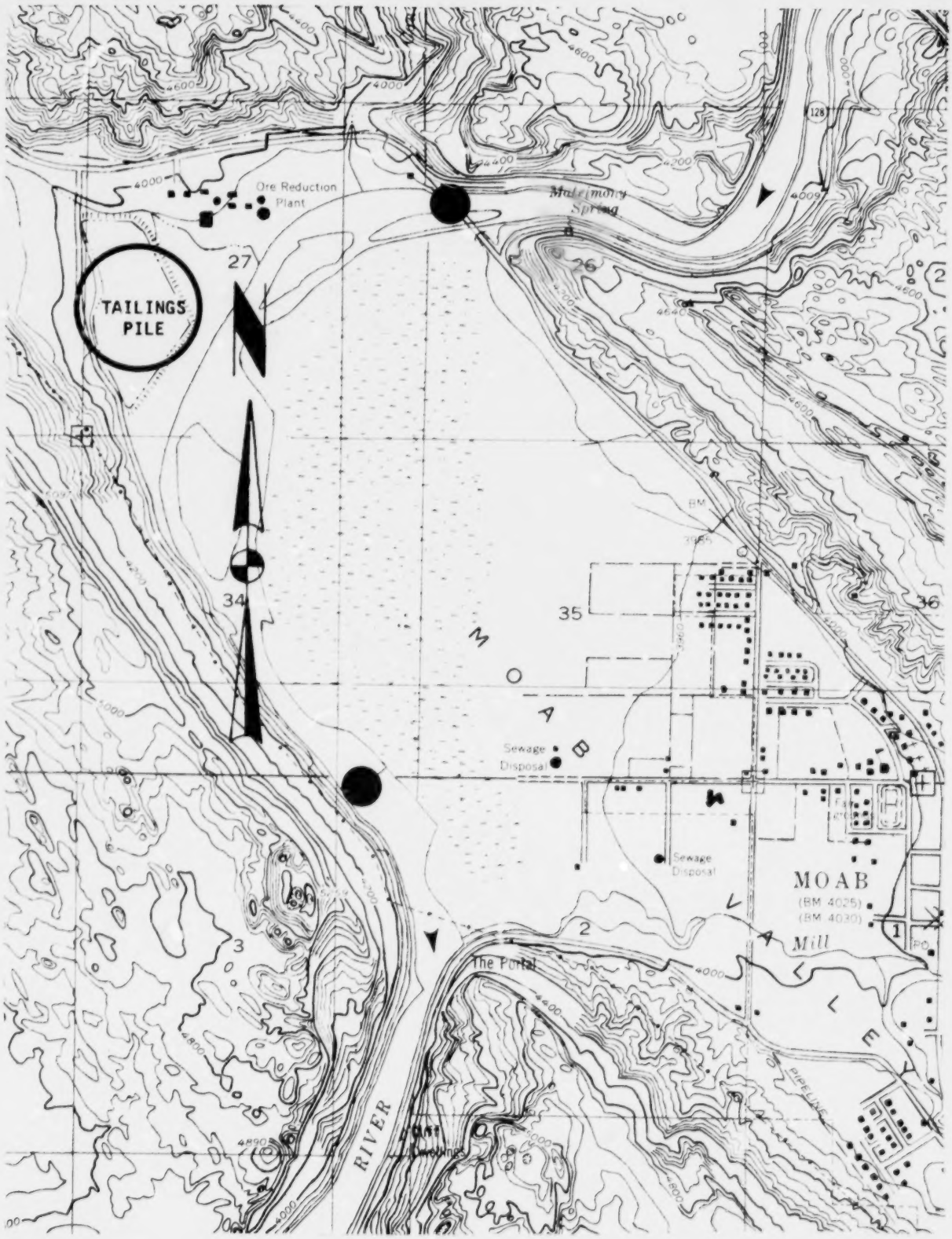
DESCRIPTION

CHAP NO. RMN-9, USGS-43, NWS-23
NW1/4, SEC 26, T25S, R21E

SAMPLED COLLECTED IN MAIN CHANNEL 1/2 MILE UPSTREAM FROM ATLAS MINERALS URANIUM MILL AT HWY 160 BRIDGE IN GRAND COUNTY.
TYPE DATA-RAD, SAL, BACT: GRAB, 3 MINIS/WEEK
SAMPLING STARTED 12/11/61 AND IS ONGOING
REMARKS: THIS STATION PROVIDES BACKGROUND DATA FOR THE COLO. RIVER UPSTREAM FROM THE OPERATING URANIUM MILL NEAR MOAB, UTAH. STREAM FLOW MUST BE COMPUTED FOR THIS STATION.
TYPE FLOW MEAS-WIR STG REC AT 09180500 NEAR CISCO, UTAH

Number of Samples assayed for Ra-226 through period of record (1961-1972): 187
Mean Ra-226 concentration for period of record and 2σ deviation : 0.23 ± 0.26

Number of Samples assayed for U(total) through period of record (1962-1972): 171
Mean U(total) concentration for period of record and 2σ deviation : 8.47 ± 7.47



STATION LOCATIONS

(RMN-9;RMN-10)

FORMER STATION LOCATION

(RMN-10)

TABLE A-5

(RMN-9)

DATE FROM TO	TIME OF DAY	DEPTH FEET	09503 RA-226 DISOLVED PC/L	09504 RA-226-D ERROR PC/L	22703 U-NAT DISOLVED UG/L
61/12/11			0.340		
61/12/30		COMP			
62/01/01			0.380		
62/01/27		COMP			
62/01/29			0.300		
62/03/03		COMP			
62/03/05			0.280		
62/03/31		COMP			
62/04/02			0.250		
62/04/28		COMP			
62/04/30			0.160		
62/06/02		COMP			
62/06/04			0.200		
62/06/30		COMP			
62/07/02			0.260		
62/07/28		COMP			
62/07/31			0.360		
62/09/01		COMP			
62/09/03			0.430		
62/09/08		COMP			
62/09/10			0.310		
62/09/15		COMP			
62/09/17			0.160		
62/09/22		COMP			
62/09/24			0.340		
62/09/29		COMP			
62/10/01			0.190		10.000
62/10/06		COMP			
62/10/08			0.160		9.500
62/10/13		COMP			
62/10/15			0.250		9.000
62/10/20		COMP			
62/10/22			0.280		8.700
62/10/27		COMP			
62/10/29			0.200		9.200
62/11/03		COMP			
62/11/05			0.130		8.900
62/11/10		COMP			
62/11/12			0.100		11.000
62/11/17		COMP			

490010
38 36 30.0 109 34 45.0
COLO R AT HIWY 160 NORTH OF MOAB
49 UTAH
COLORADO RIVER BASIN
UPPER COLORADO RIVER SUB BASIN
1118C030 2111204
2 0000 FEET DEPTH

DATE FROM TO	TIME OF DAY	DEPTH FEET	09503 RA-226 DISOLVED PC/L	09504 RA-226-D ERROR PC/L	22703 U-NAT DISOLVED UG/L
62/11/19			0.190		9.500
62/11/24		COMP			
62/11/26			0.160		11.000
62/12/01		COMP			
62/12/03			0.200		9.800
62/12/08		COMP			
62/12/10			0.190		11.000
62/12/15		COMP			
62/12/17			0.180		10.000
62/12/22		COMP			
62/12/24			0.290		12.000
62/12/29		COMP			
62/12/31			0.290		10.000
63/01/05		COMP			
63/01/07			0.210		10.000
63/01/12		COMP			
63/01/14			0.380		14.000
63/01/19		COMP			
63/01/21			0.380		14.000
63/01/26		COMP			
63/01/28			0.500		31.000
63/02/02		COMP			
63/02/04			0.200		11.000
63/02/09		COMP			
63/02/11			0.240		11.000
62/02/16		COMP			
63/02/18			0.230		12.000
63/02/23		COMP			
63/02/25			0.200		11.000
63/03/02		COMP			
63/03/04			0.240		11.000
63/03/09		COMP			
63/03/11			0.210		10.000
63/03/16		COMP			
63/03/18			0.300		15.000
63/03/23		COMP			
63/03/25			0.340		13.000
63/03/30		COMP			
63/04/01			0.310		5.300
63/04/06		COMP			

TABLE A-5 (Cont.)

(RMN-9)

490010
38 36 30.0 109 34 45.0
COLO R AT HWY 160 NORTH OF MOAB
49 UTAH
COLORADO RIVER BASIN
UPPER COLORADO RIVER SUB BASIN
1118C030 2111204
2 0000 FEET DEPTH

DATE FROM TO	TIME OF DAY	DEPTH FEET	09503 RA-226 DISOLVED PC/L	09504 RA-226-D ERROR PC/L	22703 U-NAT DISOLVED UG/L
63/04/08			0.250		6.400
63/04/13		COMP			
63/04/15			0.260		6.200
63/04/20		COMP			
63/04/22			0.350		8.100
63/04/27		COMP			
63/04/29			0.340		14.000
63/05/04		COMP			
63/05/06			0.260		8.200
63/05/11		COMP			
63/05/13			0.210		7.000
63/05/18		COMP			
63/05/20			0.200		7.400
63/05/25		COMP			
63/05/27			0.230		7.500
63/06/01		COMP			
63/06/03			0.240		4.100
63/06/08		COMP			
63/06/10			0.260		4.700
63/06/15		COMP			
63/06/17			0.210		4.700
63/06/22		COMP			
63/06/24			0.260		5.400
63/06/29		COMP			
63/07/01			0.480		14.000
63/08/03		COMP			
63/08/05			0.400		17.000
63/08/30		COMP			
63/09/02			0.250		14.000
63/09/27		COMP			
63/09/30			0.330		14.000
63/11/01		COMP			
63/11/04			0.280		11.000
63/11/29		COMP			
63/12/02			0.290		16.000
63/12/27		COMP			
63/12/30			0.500		12.000
64/01/31		COMP			
64/02/03			0.350		11.000
64/02/28		COMP			
64/03/02			0.240		13.000
64/03/27		COMP			
64/03/30			0.300		9.700
64/05/01		COMP			
64/05/04			0.240		5.600
64/05/29		COMP			
64/06/01			0.190		3.600
64/06/26		COMP			
64/06/29			0.240		7.800
64/07/31		COMP			
64/08/03			0.270		12.000
64/08/28		COMP			
64/08/31			0.230		9.600
64/10/02		COMP			
64/10/05			0.200		14.000
64/10/30		COMP			
64/11/02			0.180		15.000
64/11/27		COMP			
64/11/30			0.240		14.000
65/01/01		COMP			
65/01/04			0.190		11.000
65/01/29		COMP			
65/02/01			0.250		11.000
65/02/26		COMP			
65/03/01			0.210		11.000
65/04/02		COMP			
65/04/05			0.200		7.200
65/04/30		COMP			
65/05/03			0.180		2.600
65/05/28		COMP			
65/05/31			0.130		3.600
65/07/02		COMP			
65/07/05			0.160		3.600
65/07/30		COMP			
65/08/02			0.140		6.400
65/08/27		COMP			
65/08/30			0.200		9.700
65/10/01		COMP			
65/10/04			0.140		11.000
65/10/29		COMP			

TABLE A-5 (Cont.)

(RMN-9)

490010
38 36 30.0 109 34 45.0
COLO R AT HWY 160 NORTH OF MOAB
49 UTAH
COLORADO RIVER BASIN
UPPER COLORADO RIVER SUB BASIN
1118C030 2111204
2 0000 FEET DEPTH

DATE FROM TO	TIME OF DAY	DEPTH FEET	09503 RA-226 DISOLVED PC/L	09504 RA-226-D ERROR PC/L	22703 U-NAT DISOLVED UG/L
65/11/01			0.200		8.900
65/11/26		COMP			
65/11/29			0.300		8.000
65/12/31		COMP			
66/01/03			0.360		8.500
66/01/28		COMP			
66/01/31			0.240		6.200
66/02/25		COMP			
66/02/28			0.240		4.800
66/04/01		COMP			
66/04/04			0.190		4.500
66/04/29		COMP			
66/05/02			0.190		2.400
66/05/27		COMP			
66/05/30			0.220		5.100
66/07/01		COMP			
66/07/04			0.330		11.000
66/07/29		COMP			
66/08/01			0.370		13.000
66/09/02		COMP			
66/09/05			0.240		12.000
66/09/30		COMP			
66/10/03			0.250		12.000
66/10/28		COMP			
66/10/31			0.210		11.000
66/12/02		COMP			
66/12/05			0.210		11.000
66/12/29		COMP			
67/01/02			0.300		11.000
67/01/27		COMP			
67/01/30			0.250		11.000
67/02/24		COMP			
67/02/27			0.230		9.000
67/03/31		COMP			
67/04/03			0.200		6.400
67/04/28		COMP			
67/05/01			0.250		6.900
67/05/26		COMP			
67/05/29			0.170		3.800
67/06/30		COMP			
67/07/03			0.510		8.500
67/07/29		COMP			
67/07/31			0.290		12.000
67/09/01		COMP			
67/09/04			0.200		13.000
67/09/29		COMP			
67/10/02			0.170		14.000
67/10/27		COMP			
67/10/30			0.400		11.000
67/12/01		COMP			
67/12/04			0.320		8.700
67/12/29		COMP			
68/01/01			0.310		9.300
68/02/02		COMP			
68/02/05			0.250		9.100
68/03/01		COMP			
68/03/04			0.240		10.000
68/03/29		COMP			
68/04/01			0.420		8.800
68/04/26		COMP			
68/04/29			0.210		4.900
68/05/31		COMP			
68/06/03			0.200	0.020	2.000
68/06/28		COMP			
68/07/01	10 00				
CP(T)-06			0.260	0.030	6.000
68/08/02	10 00				
68/08/05			0.280	0.030	8.000
68/08/30		COMP			
68/09/02			0.220	0.020	14.000
68/09/27		COMP			
68/09/30			0.160	0.020	12.000
68/11/01		COMP			
68/11/04			0.160	0.020	7.900
68/11/29		COMP			
68/12/02			0.190	0.020	9.600
68/12/27		COMP			
68/12/30			0.160	0.020	8.300
69/01/31		COMP			
69/02/03			0.170	0.020	9.300
69/02/28		COMP			

TABLE A-5 (Cont.)

(RMN-9)

490010
38 36 30.0 109 34 45.0
COLO R AT HIWY 160 NORTH OF MOAB
49 UTAH
COLORADO RIVER BASIN
UPPER COLORADO RIVER SUB BASIN
1118C030 2111204
2 0000 FEET DEPTH

DATE FROM TO	TIME OF DAY	DEPTH FEET	09503 RA-226 DISOLVED PC/L	09504 RA-226-D ERROR PC/L	22703 U-NAT DISOLVED UG/L
69/03/03			0.190	0.020	7.400
69/03/28		COMP			
69/03/31			0.190	0.020	5.600
69/05/02		COMP			
69/05/05			0.110	0.010	4.300
69/05/30		COMP			
69/06/02			0.130	0.020	4.800
69/06/27		COMP			
69/09/22			0.340	0.030	16.000
69/10/09			0.140	0.020	
69/10/27		COMP			
69/10/14			0.130	0.020	8.000
69/10/28		COMP			
69/11/04			0.150	0.020	7.400
69/11/20		COMP			
69/12/12			0.150	0.020	7.700
70/01/02		COMP			
70/01/22			0.200	0.020	7.400
70/02/02			0.150	0.020	8.600
70/03/20			0.090	0.020	6.400
70/04/22			0.260	0.030	6.000
70/04/27		COMP			
70/05/07			0.170	0.020	4.900
70/05/25		COMP			
70/06/03			0.090	0.010	2.400
70/06/18		COMP			
70/07/02			0.110	0.020	5.000
70/07/23		COMP			
70/08/07			0.220	0.020	7.100
70/08/27		COMP			
70/09/03			0.150	0.020	6.500
70/10/02		COMP			
70/10/09			0.130	0.020	7.300
70/10/27		COMP			
70/11/02			0.100	0.020	6.300
70/11/24		COMP			
70/12/02			0.110	0.020	5.600
70/12/29		COMP			
71/01/04			0.160	0.020	5.100
71/01/25		COMP			
71/02/02			0.090	0.020	3.800
71/02/24		COMP			
71/03/01			0.170	0.020	4.500
71/03/29		COMP			
71/04/05			0.100	0.020	4.900
71/04/30		COMP			
71/05/07			0.100	0.020	3.200
71/05/24		COMP			
71/06/01			0.090	0.020	1.900
71/06/29		COMP			
71/07/09			0.190		4.000
71/07/30		COMP			
71/08/02			0.100K		4.600
71/08/16		COMP			
71/09/07			0.100K		9.300
71/10/01		COMP			
71/10/08			0.200		6.900
71/10/13			1.300		5.900
71/10/21			0.200		7.500
71/11/02			0.200		12.000
71/11/09			0.200		10.000
71/11/12			0.600		6.900
71/11/17			0.100		5.900
71/11/19			0.100		7.200
71/11/24			0.100		9.300
71/12/08			1.000		8.900
71/12/15			0.200		8.200
71/12/20			0.200		7.200
71/12/28			0.300		8.900
72/01/06			0.200		4.600
72/01/14			0.200		9.300
72/01/17			0.100		9.700
72/01/27			0.200		4.300
72/02/01			0.100		5.900
72/02/07			0.100		4.100
72/02/17			0.200		5.900
72/02/25			0.200		10.000
72/02/28			0.100		2.100
72/03/09			0.200		6.600

TABLE A-5 (Cont.)

(RMN-9)

490010
38 36 30.0 109 34 45.0
COLO R AT HWY 160 NORTH OF MOAB
49 UTAH
COLORADO RIVER BASIN
UPPER COLORADO RIVER SUB BASIN
1118C030 2111204
2 0000 FEET DEPTH

DATE FROM TO	TIME OF DAY	DEPTH FEET	09503 RA-226 DISOLVED PC/L	09504 RA-226-D ERROR PC/L	22703 U-NAT DISOLVED UG/L
72/03/16			0.100		3.900
72/03/22			0.200		5.000
72/03/29			0.100		9.700
72/04/03			0.100K		5.200
72/04/13			0.200		7.200
72/04/20			0.100		1.900
72/04/28			0.200		6.400
72/05/05			0.200		7.500
72/05/12			0.100K		5.900
72/05/16			0.300		6.400
72/06/09			0.200		
72/06/16			0.300		4.400
72/06/20			0.200		
72/06/30			0.200		6.100

STATION DESCRIPTION

(RMN-10)

490009
38 34 45.0 109 34 50.0
COLORADO RIVER DWS OF MOAB
49 UTAH
COLORADO RIVER BASIN
UPPER COLORADO SUB BASIN
1116C030 2111204
2 0000 FEET DEPTH

RIVER SYSTEM II III IV V VI VII VIII IX X XI XII
INDEX 1101001
MILES 0990.60

DESCRIPTION

CRHP NO. RMN-10; BWS-24
NE1/4, NE1/4, SEC 3, T26S, R21E

SAMPLED 6MI. DOWNSTREAM FROM HWY 160 BRIDGE NW OF MOAB UNTIL 07/69. NOW SAMPLED 1000FT UPSTREAM OF MILL CREEK. SAMPLE TAKEN FROM WEST BANK
TYPE DATA-RAD; GRAB, 3 PINTS/WEEK
SAMPLING BEGAN 12/11/61 AND IS ONGOING
REMARKS: THE ATLAS MINERAL URANIUM MILL 5 1/2 MILES UPSTREAM DISCHARGES LIQUID EFFLUENT AFTER TREATING IT WITH BARIUM CHLORIDE TO REMOVE RADIUM 226.
TYPE FLOW MEAS-WIR STG REC AT 09180500 NEAR CISCO, UTAH

Number of Samples assayed for Ra-226 through period of record (1961-1972): 189
Mean Ra-226 concentration for period of record and 2σ deviation : 0.37 ± 1.14

Number of Samples assayed for U(total) through period of record (1962-1972): 175
Mean U(total) concentration for period of record and 2σ deviation : 10.32 ± 7.78

SEE PREVIOUS FIGURE FOR

SAMPLING LOCATION

RMN-10

TABLE A-6

(RMN-10)

490009
38 34 45.0 109 34 50.0
COLORADO RIVER DWS OF MOAB
49 UTAH
COLORADO RIVER BASIN
UPPER COLORADO SUB BASIN
1118C030 2111204
2 0000 FEET DEPTH

DATE FROM TO	TIME OF DAY	DEPTH FEET	09503 RA-226 DISOLVED PC/L	09504 RA-226-D ERROR PC/L	22703 U-NAT DISOLVED UG/L
61/12/11			0.400		
61/12/30		COMP			
62/01/01			0.470		
62/01/27		COMP			
62/01/29			0.350		
62/03/03		COMP			
62/03/05			0.330		
62/03/31		COMP			
62/04/02			0.290		
62/04/28		COMP			
62/04/30			0.240		
62/06/02		COMP			
62/06/04			0.180		
62/06/30		COMP			
62/07/02			0.340		
62/07/28		COMP			
62/07/30			0.490		
62/09/01		COMP			
62/09/03			0.310		
62/09/08		COMP			
62/09/10			0.430		
62/09/15		COMP			
62/09/17			0.330		
62/09/22		COMP			
62/09/24			0.210		
62/09/29		COMP			
62/10/01			0.210		9.000
62/11/03		COMP			
62/11/05			0.330		11.000
62/11/10		COMP			
62/11/12			0.300		11.000
62/11/17		COMP			
62/11/19			0.300		12.000
62/11/24		COMP			
62/11/26			0.280		12.000
62/12/01		COMP			
62/12/03			0.280		10.000
62/12/08		COMP			
62/12/10			0.300		12.000
62/12/15		COMP			
62/12/17			0.360		12.000
62/12/22		COMP			
62/12/24			0.450		18.000
62/12/29		COMP			
62/12/31			0.400		16.000
63/01/05		COMP			
63/01/07			0.330		16.000
63/01/12		COMP			
63/01/14			0.400		14.000
63/01/19		COMP			
63/01/21			0.400		12.000
63/01/26		COMP			
63/01/28			0.380		22.000
63/02/02		COMP			
63/02/04			0.360		12.000
63/02/09		COMP			
63/02/11			0.280		12.000
63/02/16		COMP			
63/02/18			0.180		13.000
63/02/23		COMP			
63/02/25			0.300		13.000
63/03/02		COMP			
63/03/04			0.210		15.000
63/03/09		COMP			
63/03/11			0.290		14.000
63/03/16		COMP			
63/03/18			0.330		15.000
63/03/23		COMP			
63/03/25			0.380		12.000
63/03/30		COMP			
63/04/01			0.290		5.400
63/04/06		COMP			
63/04/08			0.340		7.000
63/04/13		COMP			
63/04/15			0.780		8.900
63/04/20		COMP			
63/04/22			7.210		20.000
63/04/27		COMP			
63/04/29			0.380		13.000
63/05/04		COMP			

TABLE A-6 (Cont.)

(RMN_10)

490009
38 34 45.0 109 34 50.0
COLORADO RIVER DWS OF MOAB
49 UTAH
COLORADO RIVER BASIN
UPPER COLORADO SUB BASIN
1118C030 2111204
2 0000 FEET DEPTH

DATE FROM TO	TIME OF DAY	DEPTH FEET	09503 RA-226 DISOLVED PC/L	09504 RA-226-D ERROR PC/L	22703 U-NAT DISOLVED UG/L
63/05/06			0.300		12.000
63/05/11		COMP			
63/05/13			0.190		7.800
63/05/18		COMP			
63/05/20			0.230		6.900
63/05/25		COMP			
63/05/27			0.240		7.300
63/06/01		COMP			
63/06/03			0.230		3.900
63/06/08		COMP			
63/06/10			0.300		5.400
63/06/15		COMP			
63/06/17			0.300		5.700
63/06/22		COMP			
63/06/24			0.310		6.800
63/06/29		COMP			
63/07/01			0.510		12.000
63/08/03		COMP			
63/08/05			0.360		17.000
63/08/30		COMP			
63/09/02			0.260		14.000
63/09/27		COMP			
63/09/30			0.290		16.000
63/11/01		COMP			
63/11/04			0.240		12.000
63/11/29		COMP			
63/12/02			0.280		16.000
63/12/27		COMP			
63/12/30			0.680		12.000
64/01/31		COMP			
64/02/03			0.340		13.000
64/02/28		COMP			
64/03/02			0.280		13.000
64/03/27		COMP			
64/03/30			0.280		9.700
64/05/01		COMP			
64/05/04			0.230		5.600
64/05/29		COMP			
64/06/01			0.230		3.700
64/06/26		COMP			
64/06/29			0.270		8.500
64/07/31		COMP			
64/08/03			0.270		8.600
64/08/28		COMP			
64/08/31			0.280		16.000
64/10/01		COMP			
64/10/05			0.290		18.000
64/10/30		COMP			
64/11/02			0.330		17.000
64/11/27		COMP			
64/11/30			0.270		16.000
65/01/01		COMP			
65/01/04			0.290		14.000
65/01/29		COMP			
65/02/01			0.280		14.000
65/02/26		COMP			
65/03/01			0.320		13.000
65/04/02		COMP			
65/04/05			0.290		8.100
65/04/30		COMP			
65/05/03			0.320		3.000
65/05/28		COMP			
65/05/31			0.190		3.400
65/07/02		COMP			
65/07/05			0.160		4.700
65/07/30		COMP			
65/08/02			0.220		7.200
65/08/27		COMP			
65/08/30			0.230		12.000
65/10/01		COMP			
65/10/04			0.160		11.000
65/10/29		COMP			
65/11/01			0.330		14.000
65/11/26		COMP			
65/11/29			0.410		9.100
65/12/31		COMP			
66/01/03			0.270		11.000
66/01/28		COMP			
66/01/31			0.310		12.000
66/02/25		COMP			

TABLE A-6 (Cont.)

(RMN-10)

DATE FROM TO	TIME OF DAY	DEPTH FEET	09503 RA-226 DISOLVED PC/L	09504 RA-226-D ERROR PC/L	22703 U-NAT DISOLVED UG/L
66/02/28			0.220		5.500
66/04/01		COMP			
66/04/04			0.220		6.300
66/04/29		COMP			
66/05/02			0.180		3.100
66/05/27		COMP			
66/05/30			0.200		4.800
66/07/01		COMP			
66/07/04			0.290		12.000
66/07/29		COMP			
66/08/01			0.640		13.000
66/09/02		COMP			
66/09/05			0.270		12.000
66/09/30		COMP			
66/10/03			0.270		15.000
66/10/28		COMP			
66/10/31			0.230		13.000
66/12/02		COMP			
66/12/05			1.470		15.000
66/12/29		COMP			
67/01/02			2.940		16.000
67/01/27		COMP			
67/01/30			1.180		14.000
67/02/24		COMP			
67/02/27			0.970		12.000
67/03/31		COMP			
67/04/03			0.470		8.500
67/04/28		COMP			
67/05/01			0.390		8.400
67/05/26		COMP			
67/05/28			0.250		4.300
67/06/30		COMP			
67/07/03			0.320		7.200
67/07/28		COMP			
67/07/31			0.310		14.000
67/09/01		COMP			
67/09/04			1.090		18.000
67/09/29		COMP			
67/10/02			0.940		18.000
67/10/27		COMP			

490009
38 34 45.0 109 34 50.0
COLORADO RIVER DWS OF MOAB
49 UTAH
COLORADO RIVER BASIN
UPPER COLORADO SUB BASIN
1118C030 2111204
2 0000 FEET DEPTH

DATE FROM TO	TIME OF DAY	DEPTH FEET	09503 RA-226 DISOLVED PC/L	09504 RA-226-D ERROR PC/L	22703 U-NAT DISOLVED UG/L
67/10/30			0.970		14.000
67/12/01		COMP			
67/12/04			1.080		11.000
67/12/29		COMP			
68/01/01			0.710		10.000
68/02/02		COMP			
68/02/05			0.560		10.000
68/03/01		COMP			
68/03/04			1.270		12.000
68/03/29		COMP			
68/04/01			0.410		11.000
68/04/26		COMP			
68/04/29			0.370		6.000
68/05/31		COMP			
68/06/03			0.370	0.030	2.200
68/06/28		COMP			
68/07/01	10 00				
CP(T)-06			0.300	0.030	8.800
68/08/02	10 00				
68/08/05			0.250	0.020	8.200
68/08/30		COMP			
68/09/02			0.350	0.030	15.000
68/09/27		COMP			
68/09/30			0.300		14.000
68/11/01		COMP			
68/11/04			0.230	0.030	13.000
68/11/29		COMP			
68/11/18			0.180	0.030	11.000
68/11/20			0.390	0.070	13.000
68/11/22			0.460	0.070	13.000
68/11/24			0.340	0.030	14.000
68/11/27			0.170	0.030	13.000
68/11/29			0.150	0.030	
68/12/02			0.240	0.040	9.400
68/12/23		COMP			
68/12/25			0.250	0.030	8.500
68/12/27			0.240	0.030	8.900
68/12/30			0.190	0.020	7.600
69/01/31		COMP			
69/02/03			0.220	0.020	9.500
69/02/28		COMP			

TABLE A-6 (Cont.)

(RMN-10)

490009
38 34 45.0 109 34 50.0
COLORADO RIVER DWS OF MOAB
49 UTAH
COLORADO RIVER BASIN
UPPER COLORADO SUB BASIN
1118C030 2111204
2 0000 FEET DEPTH

DATE FROM TO	TIME OF DAY	DEPTH FEET	09503 RA-226 DISOLVED PC/L	09504 RA-226-D ERROR PC/L	22703 U-NAT DISOLVED UG/L
69/03/03			0.240	0.030	8.100
69/03/28		COMP			
69/03/31			0.200	0.020	5.800
69/05/02		COMP			
69/05/05			0.130	0.020	4.200
69/05/30		COMP			
69/06/02			0.140	0.020	5.600
69/06/27		COMP			
69/09/22			0.290	0.030	17.000
69/10/14			0.210	0.020	10.000
69/10/28		COMP			
69/11/04			0.150	0.020	12.000
69/11/20		COMP			
69/12/12			0.210	0.030	16.000
70/01/02		COMP			
70/01/22			0.220	0.020	11.000
70/02/02			0.230	0.030	12.000
70/03/20			0.160	0.020	6.900
70/04/22			0.120	0.020	9.300
70/04/27		COMP			
70/05/07			0.150	0.020	6.400
70/05/25		COMP			
70/06/03			0.140	0.020	7.500
70/06/18		COMP			
70/07/02			0.190	0.030	7.900
70/07/23		COMP			
70/08/07			0.270	0.030	11.000
70/08/27		COMP			
70/09/03			0.200	0.020	11.000
70/10/02		COMP			
70/10/09			0.200	0.020	9.700
70/10/27		COMP			
70/11/02			0.160	0.020	11.000
70/11/24		COMP			
70/12/02			0.150	0.020	10.000
70/12/29		COMP			
71/01/04			0.220	0.020	12.000
71/01/25		COMP			
71/02/02			0.180	0.020	7.800
71/02/24		COMP			
71/03/01			0.200	0.020	6.100
71/03/29		COMP			
71/04/05			0.120	0.020	7.000
71/04/30		COMP			
71/05/07			0.120	0.020	4.300
71/05/24		COMP			
71/06/01			0.100	0.020	3.300
71/06/29		COMP			
71/07/09			0.330		4.000
71/07/30		COMP			
71/08/02			0.300		4.600
71/08/16		COMP			
71/09/07			0.300		9.300
71/10/01		COMP			
71/10/08			0.500		8.500
71/10/13			0.100		13.000
71/10/21			0.300		14.000
71/11/02			0.200		12.000
71/11/09			0.200		10.000
71/11/17			0.100K		11.000
71/11/30			0.200		11.000
71/12/08			0.100		13.000
71/12/15			0.300		15.000
71/12/20			0.300		10.000
71/12/28			0.200		2.200
72/01/06			0.300		12.000
72/01/14			0.300		5.900
72/01/17			0.200		6.900
72/01/27			0.100K		8.500
72/02/01			0.200		13.000
72/02/07			0.200		9.300
72/02/17			0.200		8.500
72/02/25			0.300		10.000
72/02/28			0.300		6.600
72/03/09			0.200		4.500
72/03/16			0.300		6.100
72/03/22			0.300		10.200
72/03/29			0.400		10.200
72/04/03			0.300		8.200

TABLE A-6 (Cont.)

(RMN-10)

490009
38 34 45.0 109 34 50.0
COLORADO RIVER DWS OF MOAB
49 UTAH
COLORADO RIVER BASIN
UPPER COLORADO SUB BASIN
1118C030 2111204
2 0000 FEET DEPTH

DATE FROM TO	TIME OF DAY	DEPTH FEET	09503 RA-226 DISOLVED PC/L	09504 RA-226-D ERROR PC/L	22703 U-NAT DISOLVED UG/L
72/04/13			0.200		9.300
72/04/20			0.200		11.000
72/04/28			0.300		7.500
72/05/05			0.300		11.000
72/05/12			0.300		9.300
72/05/16			0.300		7.500
72/05/22			0.300		3.300
72/06/09			0.200		4.600
72/06/16			0.200		6.100
72/06/20			0.200		6.400
72/06/30			0.300		9.100

STATION DESCRIPTION

(RMN-11)

070004
37 16 45.0 107 52 47.0
ANIMAS RIVER AT DURANGO
08 COLORADO
COLORADO RIVER BASIN
MIDDLE COLORADO-SAN JUAN SUB BASIN
1118C030 2111204
2 0000 FEET DEPTH

	RIVER SYSTEM	II	III	IV	V	VI	VII	VIII	IX	X	XI	XII
INDEX	1101001	009420	02370									
MILES	0789.60	0249.00	058.20	•	•	•	•	•	•	•	•	•

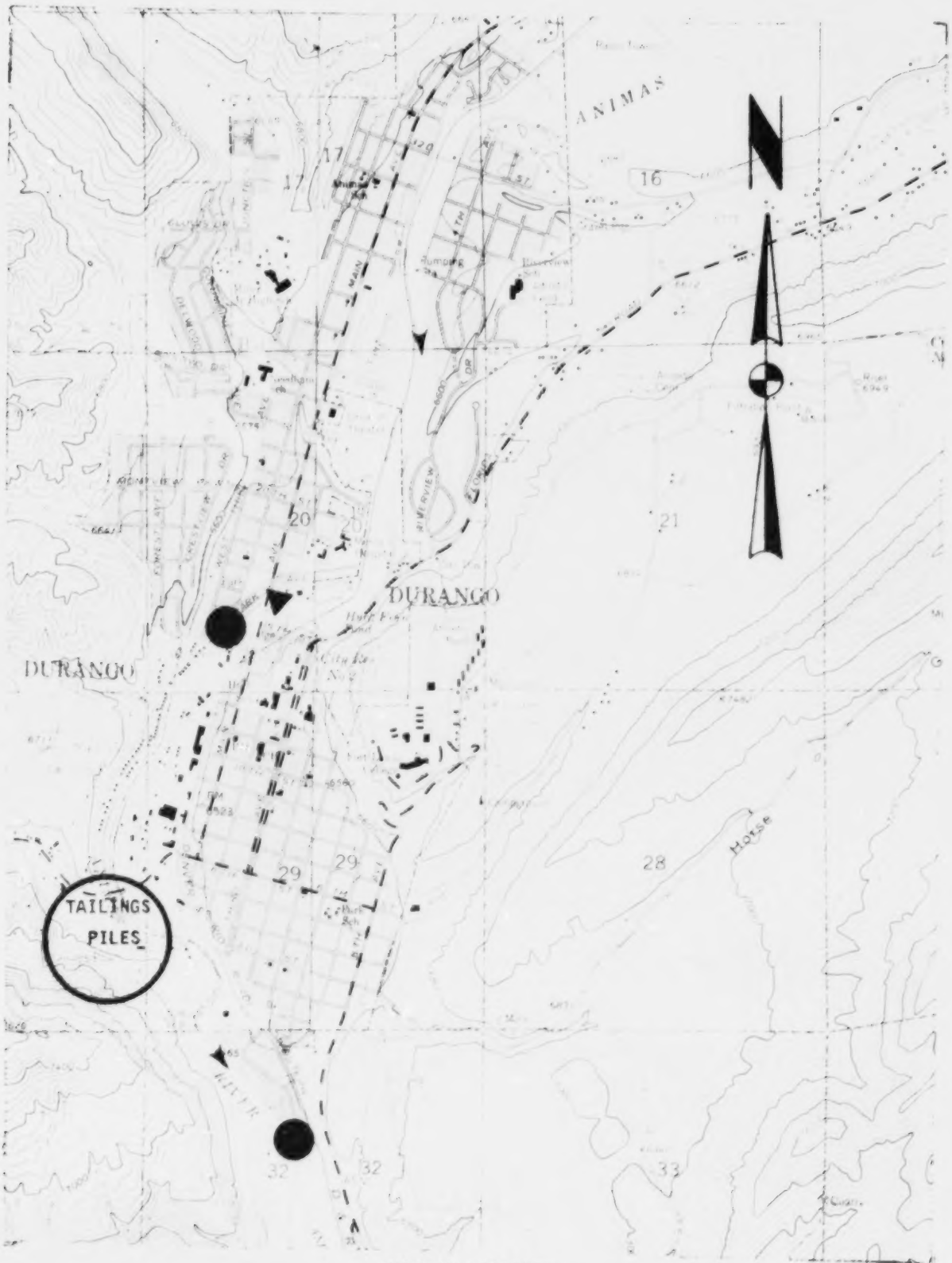
DESCRIPTION

CRRP NO. RMN-11, BWS-57, USGS-09-361500
SW1/4, SW1/4, SEC 20, T35N, R9W

(1) SAMPLED UPSTREAM HWY 789 BRIDGE IN DURANGO UNTIL 09/69 THEN SAMPLED DWS (2) 1/4 MI., 09/69-07/72. (3) SAMPLED DWS STP 1/2MI. 07/72-SAMPLED AT SITE (2)&(3) 03/73
TYPE DATA-RAD; GRAB, 1 GAL/WEEK
TYPE FLOW MEAS-WTR STG REC AT 09361500
SAMPLING STARTED 7/17/61 AND IS ONGOING
REMARKS: THIS STATION PROVIDES BACKGROUND RADIOACTIVITY DATA FOR THE ANIMAS RIVER. PRIOR TO 7/1/64 THE SAMPLE WAS GRAB, 3 PINTS/WEEK

Number of Samples assayed for Ra-226 through period of record (1961-1972): 104
Mean Ra-226 concentration for period of record and 2σ- deviation : 0.05 ± 0.04

Number of Samples assayed for U(total) through period of record (1962-1972): 98
Mean U(total) concentration for period of record and 2σ- deviation : 1.39 ± 1.54



STATION LOCATION

(RMN-11)

TABLE A-7

(RMN-11)

070004
37 16 45.0 107 52 47.0
ANIMAS RIVER AT DURANGO
08 COLORADO
COLORADO RIVER BASIN
MIDDLE COLORADO-SAN JUAN SUB BASIN
1118C030 2111204
2 0000 FEET DEPTH

DATE FROM TO	TIME OF DAY	DEPTH FEET	09503 RA-226 DISOLVED PC/L	09504 RA-226-D ERROR PC/L	22703 U-NAT DISOLVED UG/L
61/07/17			0.060		
61/07/22		COMP			
61/07/24			0.060		
61/07/31		COMP			
61/07/31			0.050		
61/08/05		COMP			
61/08/21			0.060		
61/08/28		COMP			
61/08/28			0.050		
61/09/04		COMP			
61/09/02			0.060		
61/09/09		COMP			
62/10/01			0.060		1.000
62/10/30		COMP			
62/11/05			0.030		1.800
62/11/30		COMP			
62/12/03			0.060		0.600
62/12/28		COMP			
62/12/31			0.050		1.200
63/02/01		COMP			
63/02/04			0.080		2.100
63/02/27		COMP			
63/03/06			0.080		1.200
63/03/29		COMP			
63/04/01			0.060		0.200
63/04/26		COMP			
63/04/29			0.040		2.500
63/05/31		COMP			
63/06/03			0.060		0.900
63/06/28		COMP			
63/07/01			0.110		1.500
63/08/03		COMP			
63/08/05			0.060		0.500
63/08/30		COMP			
63/09/04			0.040		1.000
63/09/27		COMP			
63/09/30			0.050		0.800
63/11/01		COMP			
63/11/04			0.040		1.100
63/11/27		COMP			
63/12/02			0.040		1.500
63/12/27		COMP			
64/01/03			0.040		1.000
64/01/31		COMP			
64/02/03			0.060		1.300
64/02/07		COMP			
64/02/14			0.040		1.000
64/02/21		COMP			
64/02/24			0.070		0.900
64/02/28		COMP			
64/03/09			0.030		0.100
64/03/13		COMP			
64/03/16			0.050		0.700
64/03/27		COMP			
64/03/30			0.050		0.900
64/05/01		COMP			
64/05/04			0.040		0.600
64/05/29		COMP			
64/06/13			0.050		0.700
64/06/26		COMP			
64/06/28			0.040		0.700
64/07/30		COMP			
64/08/03			0.080		0.900
64/08/28		COMP			
64/08/31			0.050		1.400
64/10/02		COMP			
64/10/09			0.000		1.900
64/10/30		COMP			
64/11/06			0.060		1.900
64/11/25		COMP			
64/12/04			0.060		1.900
64/12/31		COMP			
65/01/08			0.040		1.200
65/01/29		COMP			
65/02/05			0.040		1.000
65/02/26		COMP			
65/03/05			0.050		1.400
65/04/06		COMP			
65/04/09			0.060		1.400
65/04/30		COMP			

TABLE A-7 (Cont.)

(RMN-11)

DATE FROM TO	TIME OF DAY	DEPTH FEET	09503 RA-226 DISOLVED PC/L	09504 RA-226-D ERROR PC/L	22703 U-NAT DISOLVED UG/L
65/05/07			0.040		0.900
65/05/28		COMP			
65/06/04			0.080		1.500
65/07/02		COMP			
65/07/09			0.010		2.000
65/07/30		COMP			
65/08/06			0.030		1.400
65/08/20		COMP			
65/09/03			0.050		2.200
65/10/01		COMP			
65/10/08			0.050		2.100
65/10/29		COMP			
65/11/05			0.040		0.600
65/11/26		COMP			
65/12/03			0.040		1.800
65/12/31		COMP			
66/01/07			0.030		1.100
66/01/28		COMP			
66/02/04			0.040		1.000
66/02/25		COMP			
66/03/04			0.040		1.300
66/04/01		COMP			
66/04/08			0.030		1.100
66/04/29		COMP			
66/05/06			0.030		0.600
66/05/27		COMP			
66/06/03			0.050		1.300
66/07/01		COMP			
66/07/01			0.050		0.300
66/08/05			0.080		1.400
66/09/02		COMP			
66/09/01			0.060		0.800
66/10/01			0.060		2.900
66/11/01			0.050		1.100
66/12/01			0.050		0.700
67/01/01			0.050		1.400
67/02/06			0.050		1.200
67/02/24		COMP			
67/03/03			0.040		2.000
67/03/31		COMP			

070004
37 16 45.0 107 52 47.0
ANIMAS RIVER AT DURANGO
08 COLORADO
COLORADO RIVER BASIN
MIDDLE COLORADO-SAN JUAN SUB BASIN
1118C030 2111204
2 0000 FEET DEPTH

DATE FROM TO	TIME OF DAY	DEPTH FEET	09503 RA-226 DISOLVED PC/L	09504 RA-226-D ERROR PC/L	22703 U-NAT DISOLVED UG/L
67/04/07			0.050		1.500
67/05/03		COMP			
67/05/08			0.030		0.700
67/05/26		COMP			
67/06/02			0.040		0.600
67/06/30		COMP			
67/07/07			0.030		0.800
67/07/28		COMP			
67/08/04			0.050		1.600
67/09/01		COMP			
67/09/01	10 00				
CP(T)-04			0.060	0.010	1.400
67/09/30	10 00				
67/10/23	10 00				
CP(T)-03			0.060	0.010	2.100
67/11/13	10 00				
67/11/20	10 00				
CP(T)-04			0.040	0.010	2.300
67/12/04	10 00				
67/12/08	10 00				
CP(T)-06			0.040	0.010	1.700
67/12/23	10 00				
68/01/05	10 00				
CP(T)-04			0.050	0.010	1.200
68/02/02	10 00				
68/02/16	10 00				
CP(T)-02			0.050	0.010	1.400
68/03/01	10 00				
68/03/08	10 00				
CP(T)-04			0.050	0.010	1.200
68/03/29	10 00				
68/04/01	10 00				
CP(T)-04			0.040	0.010	1.100
68/04/30	10 00				
68/05/10	10 00				
CP(T)-02			0.070	0.010	1.400
68/05/17	10 00				
68/06/07	10 00				
CP(T)-03			0.030	0.010	0.300
68/06/21	10 00				

TABLE A-7 (Cont.)

(RMN-11)

DATE FROM TO	TIME OF DAY	DEPTH FEET	09503 RA-226 DISOLVED PC/L	09504 RA-226-D ERROR PC/L	22703 U-NAT DISOLVED UG/L
68/07/05			0.060	0.010	1.500
68/08/02		COMP			
68/08/09	10 00				
CP(T)-04			0.050	0.010	0.600
68/08/30	10 00				
68/09/06			0.030	0.010	2.000
68/09/27		COMP			
68/10/04			0.040	0.010	3.100
68/11/01		COMP			
68/11/08			0.040	0.010	3.200
68/11/27		COMP			
68/12/06			0.040	0.010	2.200
68/12/13		COMP			
69/01/03			0.080	0.010	2.800
69/01/31		COMP			
69/02/14			0.040	0.010	2.200
69/02/28		COMP			
69/03/07			0.080	0.010	3.400
69/03/28		COMP			
69/04/04			0.040	0.010	2.300
69/04/24		COMP			
69/05/30			0.030	0.010	1.900
69/06/13			0.020	0.000	1.200
69/06/27		COMP			
69/07/11			0.050	0.010	3.100
69/08/01		COMP			
69/08/08			0.050	0.010	1.100
69/08/28		COMP			
69/09/04			0.050	0.010	2.000
69/09/26		COMP			
69/12/18			0.050	0.010	3.000
70/01/01			0.060	0.010	4.200
70/03/31		COMP			
70/03/30			0.050	0.010	1.700
70/05/12		COMP			
70/09/10			0.140	0.020	0.800
70/12/07			0.050	0.010	0.600
71/03/04			0.040	0.010	0.600
71/05/14			0.040	0.010	0.700

070004
37 16 45.0 107 52 47.0
ANIMAS RIVER AT DURANGO
08 COLORADO
COLORADO RIVER BASIN
MIDDLE COLORADO-SAN JUAN SUB BASIN
1118C030 2111204
2 0000 FEET DEPTH

DATE FROM TO	TIME OF DAY	DEPTH FEET	09503 RA-226 DISOLVED PC/L	09504 RA-226-D ERROR PC/L	22703 U-NAT DISOLVED UG/L
71/09/01			0.100K		0.700
71/12/07			0.100		1.200
72/03/03			0.100K		1.300
72/06/02			0.100		0.400

STATION DESCRIPTION

(RMN-12)

340000
37 02 17.0 107 52 25.0
ANIMAS RIVER NEAR CEDAR HILL
08 COLORADO
COLORADO RIVER BASIN
MIDDLE COLORADO-SAN JUAN SUB BASIN
1118C030 2111204
2 0000 FEET DEPTH

	RIVER SYSTEM	II	III	IV	V	VI	VII	VIII	IX	X	XI	XII
INDEX	1101001	009420	02370									
MILES	0789.60	0249.00	034.40	.	.	.	.	.	.	.	.	.

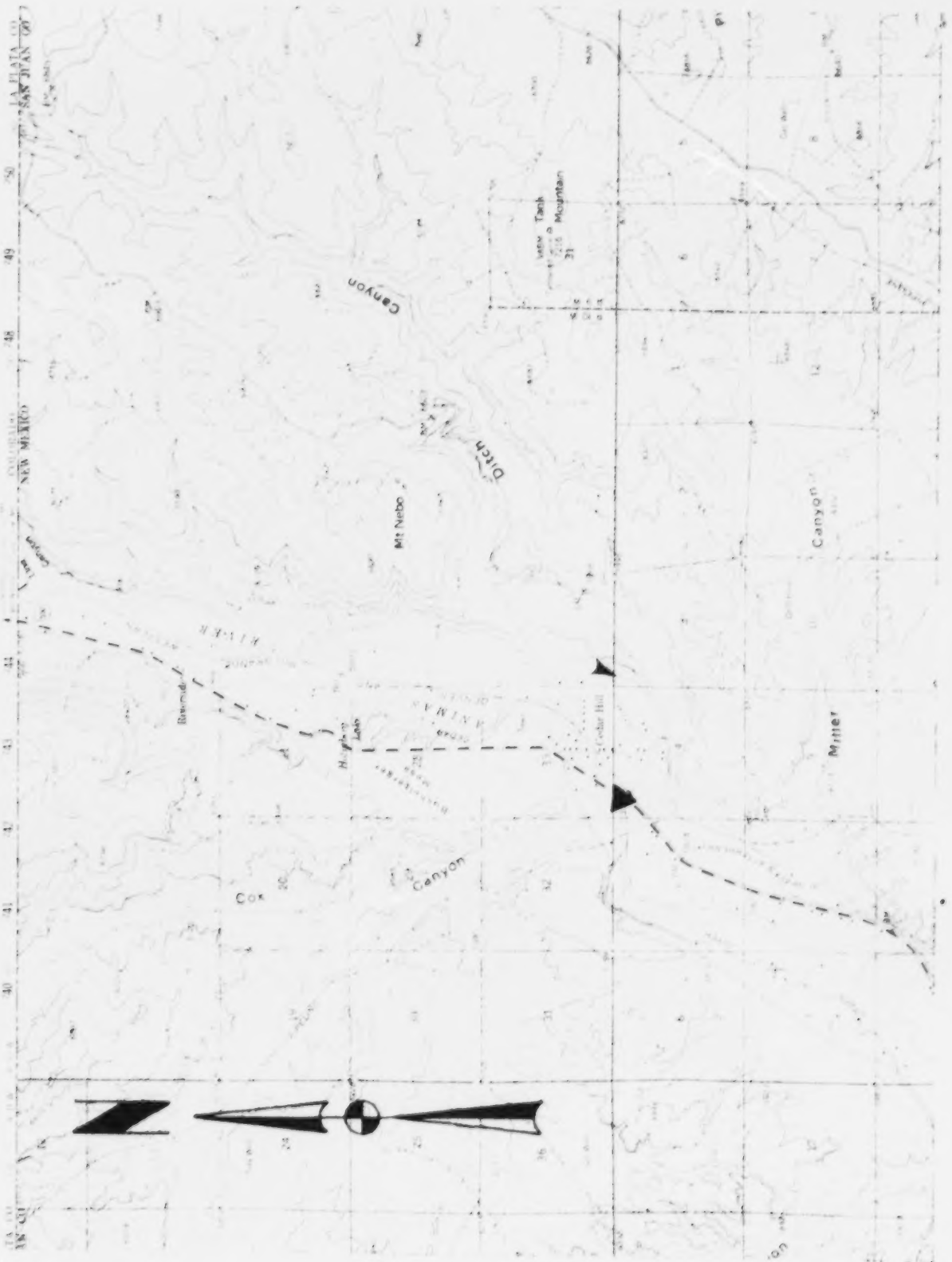
DESCRIPTION

CRBP NO. RMN-12, BWS-55, USGS-09-363500
NW1/4, NW1/4, SEC 7, T32N, R9W

SAMPLED AT US 550 BRIDGE NEAR CEDAR HILL, N. MEX. UNTIL 07/69, THEN SAMPLED 2.5MI. FROM COLO-N.MEX. STATE LINE, 8.5MILES NORTH OF CEDAR HILL IN COLORADO. TYPE DATA-RAD, BACT: GRAB, 3 PINTS/WEEK.
TYPE FLOW MEAS-WTR STG REC AT 09363500
SAMPLING STARTED 1/19/61 AND ENDED 8/17/71.
REMARKS: THE VANADIUM CORP OF AMERICA URANIUM MILL, 14MI. UPSTREAM AT DURANGO, COLO. RELEASED RADIOACTIVITY BEARING WASTES INTO RIVER UNTIL CLOSING IN 1963. PRIOR TO 7/1/64 SAMPLE WAS AUTOMATIC 1 GAL/WEEK.

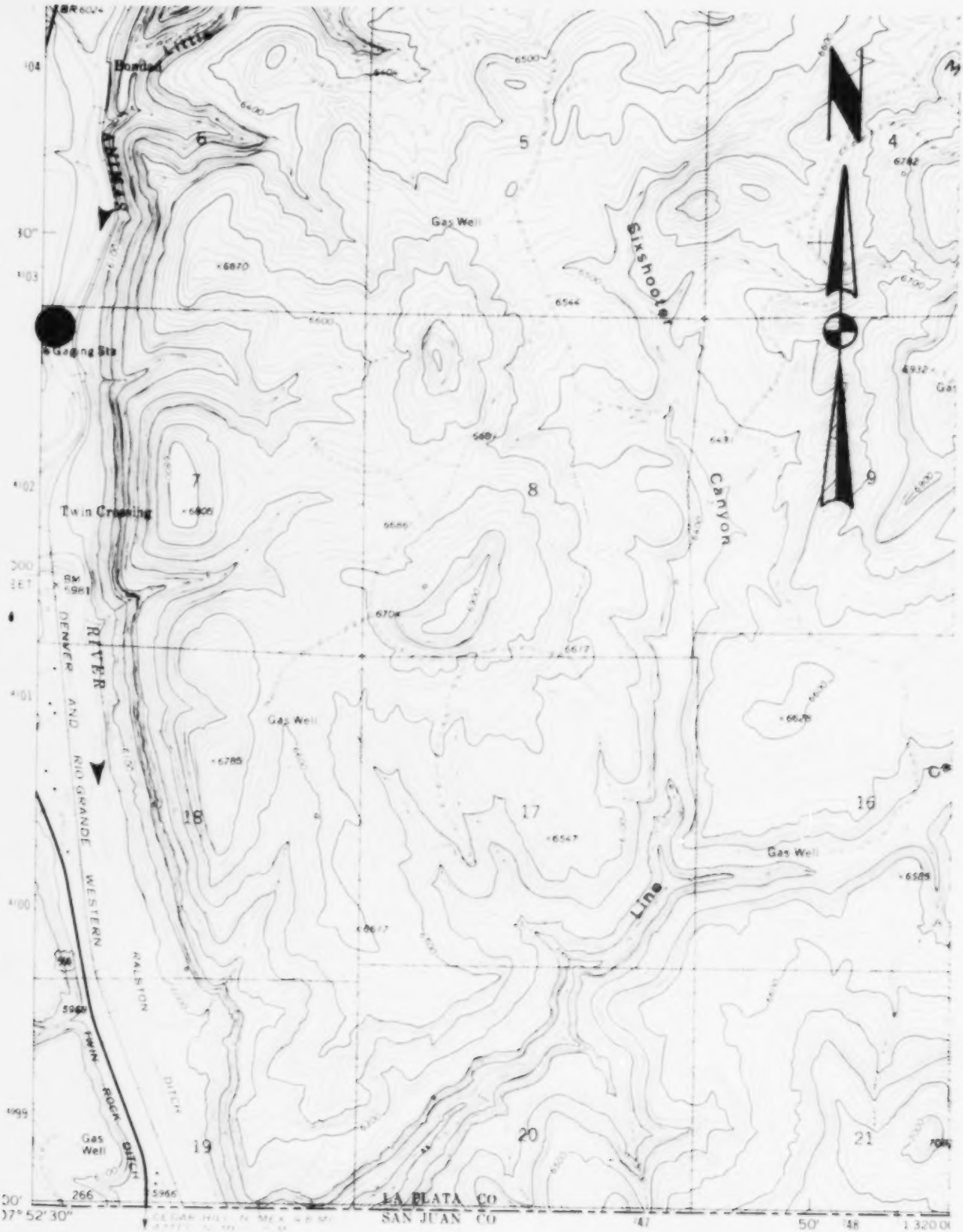
Number of Samples assayed for Ra-226 through period of record (1961-1972): 145
Mean Ra-226 concentration for period of record and 2σ deviation : 0.21 ± 0.43

Number of Samples assayed for U(total) through period of record (1962-1972): 103
Mean U(total) concentration for period of record and 2σ deviation : 2.99 ± 5.01



FORMER STATION LOCATION

(RMN-12)



STATION LOCATION

(RMN-12)

TABLE A-8

(RMN-12)

340000
37 02 17.0 107 52 25.0
ANIMAS RIVER NEAR CEDAR HILL
35 NEW MEXICO
COLORADO RIVER BASIN
MIDDLE COLORADO-SAN JUAN SUB BASIN
1118C030 2111204
2 0000 FEET DEPTH

DATE FROM TO	TIME OF DAY	DEPTH FEET	09503 RA-226 DISOLVED PC/L	09504 RA-226-D ERROR PC/L	22703 U-NAT DISOLVED UG/L
61/01/19			0.730		
61/01/25		COMP			
61/01/25			0.990		
61/01/31		COMP			
61/01/31			0.800		
61/02/07		COMP			
61/02/07			0.760		
61/02/14		COMP			
61/02/14			0.490		
61/02/21		COMP			
61/02/24			0.240		
61/02/31		COMP			
61/09/11			0.190		
61/09/18		COMP			
61/09/18			0.120		
61/09/25		COMP			
61/09/25			0.130		
61/10/02		COMP			
61/10/02			0.160		
61/10/09		COMP			
61/10/09			0.170		
61/10/16		COMP			
61/10/16			0.190		
61/10/23		COMP			
61/10/23			0.240		
61/10/30		COMP			
61/10/30			0.210		
61/11/06		COMP			
61/11/06			0.230		
61/11/13		COMP			
61/11/13			0.260		
61/11/20		COMP			
61/11/20			0.250		
61/11/27		COMP			
61/11/27			0.250		
61/12/04		COMP			
61/12/04			0.390		
61/12/13		COMP			
61/12/13			0.420		
61/12/18		COMP			
61/12/18			0.420		
61/12/26		COMP			
61/12/26			0.450		
62/01/02		COMP			
62/01/02			0.370		
62/01/08		COMP			
62/01/08			0.320		
62/01/15		COMP			
62/01/15			0.450		
62/01/22		COMP			
62/01/22			0.420		
62/01/29		COMP			
62/01/29			0.420		
62/02/05		COMP			
62/02/05			0.320		
62/02/12		COMP			
62/02/12			0.330		
62/02/19		COMP			
62/02/19			0.350		
62/02/26		COMP			
62/02/26			0.500		
62/03/05		COMP			
62/03/12			0.110		
62/03/17		COMP			
62/03/26			0.380		
62/04/02		COMP			
62/04/02			0.330		
62/04/28		COMP			
62/04/30			0.240		
62/06/02		COMP			
62/06/04			0.140		
62/07/02		COMP			
62/07/02			0.190		
62/07/30		COMP			
62/07/30			0.340		
62/09/03		COMP			
62/09/03			0.350		
62/09/10		COMP			
62/09/10			0.410		
62/09/17		COMP			

TABLE A-8 (Cont.)

(RMN-12)

340000
37 02 17.0 107 52 25.0
ANIMAS RIVER NEAR CEDAR HILL
35 NEW MEXICO
COLORADO RIVER BASIN
MIDDLE COLORADO-SAN JUAN SUB BASIN
1118C030 2111204
2 0000 FEET DEPTH

DATE FROM TO	TIME OF DAY	DEPTH FEET	09503 RA-226 DISOLVED PC/L	09504 RA-226-D ERROR PC/L	22703 U-NAT DISOLVED UG/L
62/09/17			0.350		
62/09/24		COMP			
62/09/24			0.290		
62/10/01		COMP			
62/10/01			0.240		8.500
62/10/08		COMP			
62/10/08			0.330		8.900
62/10/15		COMP			
62/10/15			0.140		6.000
62/10/22		COMP			
62/10/22			0.140		6.100
62/10/29		COMP			
62/10/29			0.180		8.300
62/11/05		COMP			
62/11/05			0.250		9.100
62/11/12		COMP			
62/12/03			0.680		7.100
62/12/10		COMP			
62/12/10			0.340		8.800
62/12/17		COMP			
62/12/17			0.460		5.600
62/12/24		COMP			
62/12/24			1.510		2.300
62/12/31		COMP			
62/12/31			1.290		2.900
63/01/07		COMP			
63/02/25			0.190		18.000
63/02/27			0.290		7.800
63/03/04		COMP			
63/03/18			0.340		10.000
63/03/25			0.340		2.800
63/04/01			0.230		1.900
63/04/08			0.210		1.600
63/04/15			0.230		1.500
63/04/22			0.200		1.800
63/04/29			0.210		3.400
63/05/06			0.200		3.200
63/05/13			0.150		2.700
63/05/20			0.100		1.800
63/05/27			0.090		2.000
63/06/03			0.130		1.600
63/06/10			0.110		2.300
63/06/17			0.160		0.400
63/06/23			0.190		0.500
63/07/09			0.230		2.300
63/07/29		COMP			
63/08/05			0.150		2.200
63/09/03		COMP			
63/09/03			0.110		1.800
63/09/23		COMP			
63/09/30			0.100		2.400
63/10/28		COMP			
63/11/04			0.130		4.000
63/11/26		COMP			
63/12/02			0.140		4.400
63/12/23		COMP			
63/12/27			0.110		2.400
64/02/01		COMP			
64/02/01			0.160		2.500
64/02/05		COMP			
64/02/21			0.160		2.500
64/02/28		COMP			
64/05/05			0.140		1.300
64/05/30		COMP			
64/06/02			0.190		0.700
64/06/27		COMP			
64/07/02			0.140		1.400
64/07/30		COMP			
64/08/05			0.030		2.300
64/08/29		COMP			
64/09/01			0.160		3.700
64/10/04		COMP			
64/10/06			0.140		6.000
64/10/31		COMP			
64/11/03			0.110		3.700
64/11/28		COMP			
64/12/02			0.100		3.500
65/01/02		COMP			
65/01/05			0.090		2.700
65/01/30		COMP			

TABLE A-8 (Cont.)

(RMN-12)

340000
37 02 17.0 107 52 25.0
ANIMAS RIVER NEAR CEDAR HILL
35 NEW MEXICO
COLORADO RIVER BASIN
MIDDLE COLORADO-SAN JUAN SUB BASIN
1118C030 2111204
2 0000 FEET DEPTH

DATE FROM TO	TIME OF DAY	DEPTH FEET	09503 RA-226 DISOLVED PC/L	09504 RA-226-D ERROR PC/L	22703 U-NAT DISOLVED UG/L
65/02/02			0.090		2.700
65/02/27		COMP			
65/03/02			0.080		3.200
65/04/03		COMP			
65/04/06			0.080		2.400
65/05/02		COMP			
65/05/05			0.140		1.700
65/05/30		COMP			
65/06/02			0.080		2.300
65/07/02		COMP			
65/07/04			0.050		1.800
65/07/31		COMP			
65/08/04			0.090		2.200
65/08/29		COMP			
65/08/31			0.090		2.800
65/09/30		COMP			
65/10/02			0.060		1.200
65/10/29		COMP			
65/10/31			0.090		2.200
65/11/27		COMP			
65/11/28			0.080		2.300
65/12/31		COMP			
66/01/03			0.050		1.900
66/01/29		COMP			
66/01/31			0.060		2.200
66/02/26		COMP			
66/02/28			0.050		0.000
66/04/02		COMP			
66/04/04			0.050		1.400
66/04/30		COMP			
66/05/02			0.080		0.800
66/05/27		COMP			
66/05/29			0.080		0.900
66/06/29		COMP			
66/07/01			0.110		1.400
66/07/28		COMP			
66/07/30			0.190		3.300
66/09/01		COMP			
66/09/03			0.140		1.800
66/09/28		COMP			
66/09/30			0.100		3.600
66/10/31		COMP			
66/11/02			0.080		1.400
66/12/02		COMP			
66/12/05			0.060		2.200
66/12/31		COMP			
67/01/03			0.090		2.500
67/01/27		COMP			
67/01/31			0.080		1.900
67/02/25		COMP			
67/02/28			0.050		3.100
67/03/29		COMP			
67/03/31			0.090		2.200
67/04/26		COMP			
67/04/28			0.110		1.100
67/05/26		COMP			
67/05/29			0.100		1.100
67/06/28		COMP			
67/07/03			0.130		3.000
67/07/29		COMP			
67/08/01			0.090		1.900
67/09/01		COMP			
67/09/04	10 00				
CP(T)-12			0.120	0.020	2.200
67/09/30	10 00				
67/10/01	10 00				
CP(T)-09			0.110	0.010	3.600
67/10/22	10 00				
67/10/28	10 00				
CP(T)-12			0.080	0.010	3.500
67/11/30	10 00				
67/12/02	10 00				
CP(T)-12			0.080	0.010	2.900
67/12/30	10 00				
68/01/02	10 00				
CP(T)-12			0.090	0.010	2.500
68/01/31	10 00				
68/02/08	10 00				
CP(T)-04			0.070	0.010	2.600
68/03/02	10 00				

TABLE A-8 (Cont.)

(RMN-12)

340000
37 02 17.0 107 52 25.0
ANIMAS RIVER NEAR CEDAR HILL
35 NEW MEXICO
COLORADO RIVER BASIN
MIDDLE COLORADO-SAN JUAN SUB BASIN
1118C030 2111204
2 0000 FEET DEPTH

DATE FROM TO	TIME OF DAY	DEPTH FEET	09503 RA-226 DISOLVED PC/L	09504 RA-226-D ERROR PC/L	22703 U-NAT DISOLVED UG/L
68/03/06	10 00				
CP(T)-12			0.100	0.010	2.400
68/03/30	10 00				
68/04/02	10 00				
CP(T)-12			0.050	0.010	1.800
68/04/26	10 00				
68/04/30			0.060	0.010	1.200
68/05/31		COMP			
68/06/03			0.060	0.020	0.800
68/06/29		COMP			
68/07/03			0.040	0.010	2.800
68/07/16		COMP			
69/07/24			0.040	0.010	1.400
69/09/03			0.080	0.010	2.300
69/10/16			0.050	0.010	2.400
69/12/10			0.040	0.010	3.300
70/01/14			0.040	0.010	2.500
70/02/10			0.050	0.010	3.700
70/03/11			0.070	0.010	3.500
70/04/14			0.050	0.010	2.600
70/05/12			0.050	0.010	1.900
70/06/09			0.020	0.010	1.900
70/07/14			0.040	0.010	2.000
70/10/13			0.050	0.010	1.800
71/01/21			0.050	0.010	1.400
71/04/20			0.030	0.010	0.500
71/08/17			0.100K		1.500

STATION DESCRIPTION

(RMN-13)

340001
36 42 30.0 108 08 30.0
SAN JUAN RIVER UPS OF FARMINGTON
35 NEW MEXICO
COLORADO RIVER BASIN
MIDDLE COLORADO-SAN JUAN SUB BASIN
111HC030 2111204
2 0000 FEET DEPTH

	RIVER SYSTEM	II	III	IV	V	VI	VII	VIII	IX	X	XI	XII
INDEX	1101001	009420										
MILES	0789.60	0254.10										

DESCRIPTION

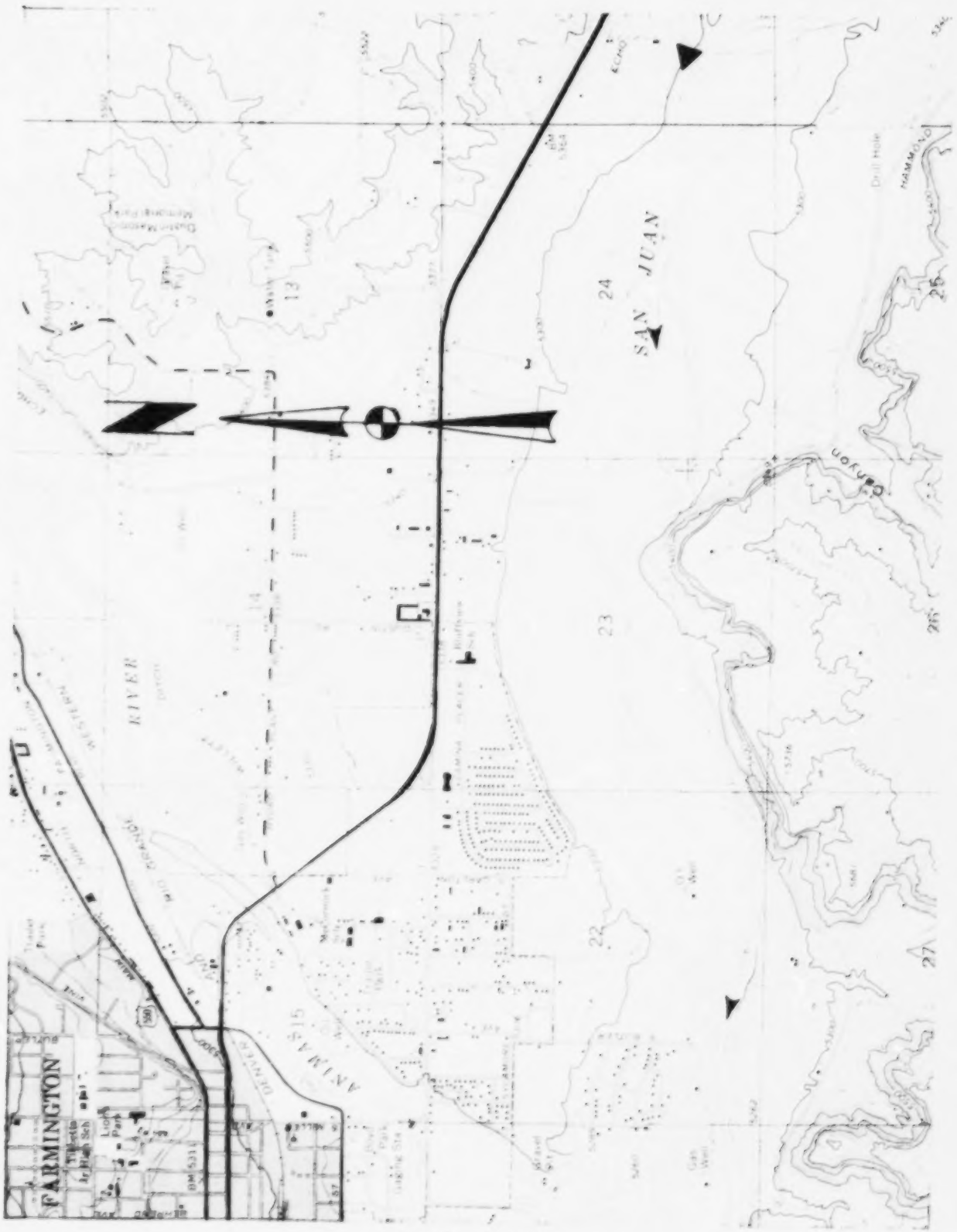
CHEM NO. RMN-13, BR2-52
SW1/4, SW1/4, SEC 14, T29N, R12W

SAMPLED AT NORTH BANK, 5 MILES UPSTREAM FROM THE MOUTH OF THE ANIMAS RIVER IN SAN JUAN COUNTY.
TYPE DATA-RADIUM GRAMS, 1 GAL/WEEK
TYPE FLOW MEAS-WTR STG REC AT 09365000 MINUS ANIMAS R. 09364500
*SAMPLING STARTED 1/4/62 AND ENDED 4/27/64
REMARKS: THIS STATION PROVIDES BACKGROUND RADIOACTIVITY FOR THE SAN JUAN RIVER

A-52

Number of Samples assayed for Ra-226 through period of record (1961-1972): 20
Mean Ra-226 concentration for period of record and 2σ deviation : 0.07 ± 0.08

Number of Samples assayed for U(total) through period of record (1962-1972): 19
Mean U(total) concentration for period of record and 2σ deviation : 2.83 ± 4.14



STATION LOCATION

(RMN-13)

TABLE A-9

(RMN-13)

340001
36 42 30.0 108 08 30.0
SAN JUAN RIVER UPS OF FARMINGTON
35 NEW MEXICO
COLORADO RIVER BASIN
MIDDLE COLORADO-SAN JUAN SUB BASIN
1118C030 2111204
2 0000 FEET DEPTH

DATE FROM TO	TIME OF DAY	DEPTH FEET	09503 RA-226 DISOLVED PC/L	09504 RA-226-D ERROR PC/L	22703 U-NAT DISOLVED UG/L
62/07/09			0.030		
62/07/23		COMP			
62/10/15			0.160		8.300
62/11/02		COMP			
62/11/05			0.030		5.400
62/12/03		COMP			
62/12/05			0.080		4.300
62/12/28		COMP			
62/12/31			0.140		4.000
63/01/28		COMP			
63/02/04			0.130		5.500
63/03/01		COMP			
63/03/04			0.050		1.900
63/03/29		COMP			
63/04/01			0.060		0.800
63/04/26		COMP			
63/04/29			0.050		3.600
63/05/31		COMP			
63/06/03			0.060		1.900
63/06/23		COMP			
63/07/01			0.110		1.700
63/07/29		COMP			
63/08/05			0.080		4.500
63/08/12		COMP			
63/09/03			0.060		2.300
63/09/23		COMP			
63/09/23			0.040		1.100
63/10/28		COMP			
63/11/04			0.060		0.000
63/11/26		COMP			
63/12/02			0.030		2.600
63/12/23		COMP			
63/12/30			0.030		1.200
64/01/27		COMP			
64/02/03			0.030		1.300
64/02/24		COMP			
64/03/02			0.030		1.200
64/03/23		COMP			
64/03/30			0.080		2.200
64/04/27		COMP			

STATION DESCRIPTION

(RMN-14)

340002
36 44 15.0 108 24 15.0
SAN JUAN RIVER NEAR FRUITLAND
35 NEW MEXICO
COLORADO RIVER BASIN
MIDDLE COLORADO-SAN JUAN SUB BASIN
11140030 2111204
2 0000 FEET , DEPTH

	RIVER SYSTEM	II	III	IV	V	VI	VII	VIII	IX	X	XI	XII
INDEX	1101001	009420										
MILES	0789.60	0235.40										

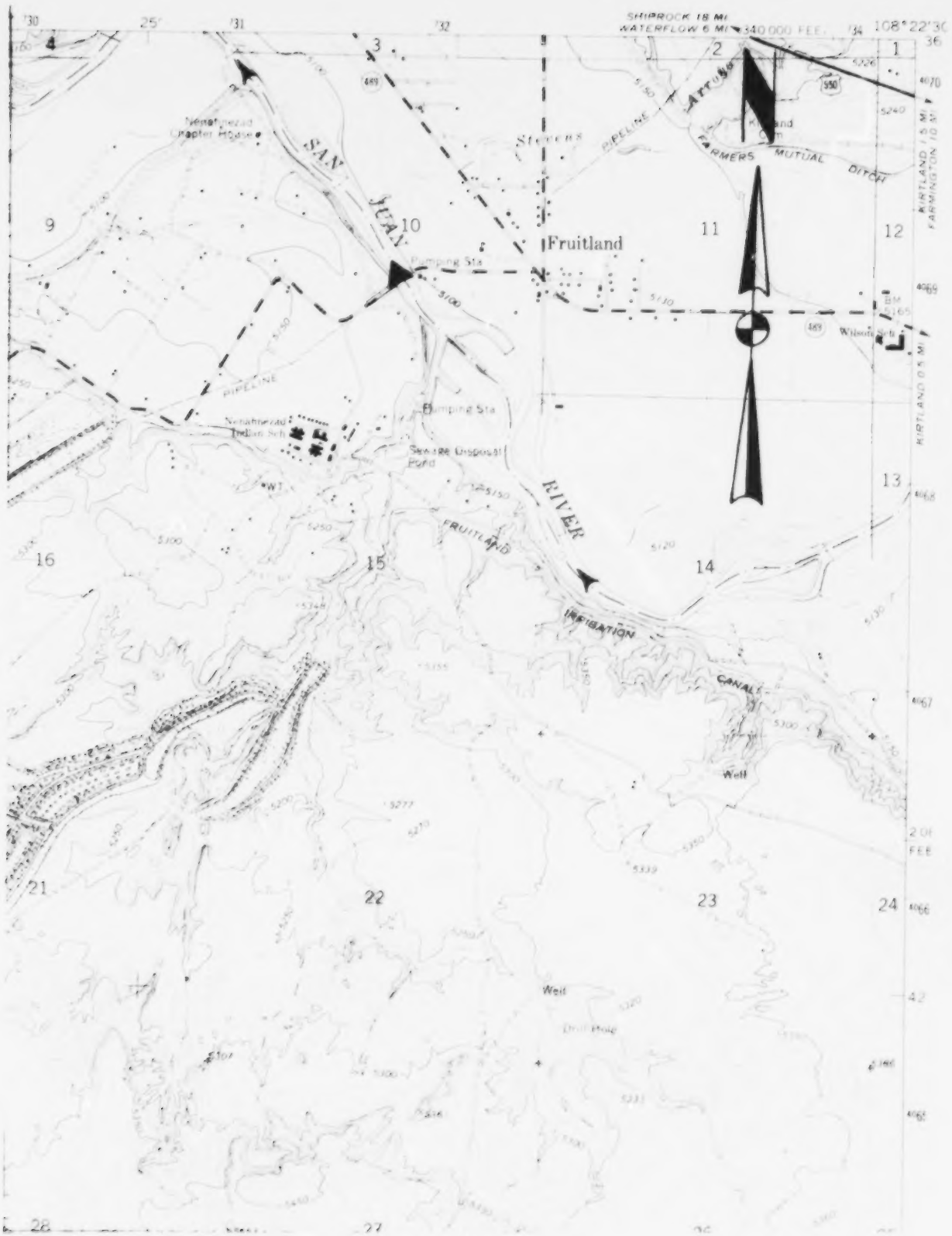
DESCRIPTION

CRBP NO. RMN-14. BW5-51
NW1/4. SE1/4.SEC 10. T29N. R15W

SAMPLED AT COUNTY ROAD BRIDGE NEAR FRUITLAND IN SAN JUAN COUNTY. BRIDGE IS ON ROAD TO 4 CORNERS POWER PLANT.
TYPE DATA-RAD: GRAB. 1 GAL/WEEK.
TYPE FLOW MEAS-WIR STG REC AT 09365000
SAMPLING STARTED 8/1/62 AND ENDED 9/3/69
REMARKS: THIS STATION PROVIDES BACKGROUND RADIOACTIVITY DATA UPSTREAM FROM THE VANADIUM CORPORATION OF AMERICA URANIUM MILL AT SHIPROCK, NEW MEXICO.

Number of Samples assayed for Ra-226 through period of record (1961-1972): 85
Mean Ra-226 concentration for period of record and 2σ deviation : 0.07 ± 0.07

Number of Samples assayed for U(total) through period of record (1962-1972): 84
Mean U(total) concentration for period of record and 2σ deviation : 2.90 ± 3.23



STATION LOCATION

(RMN-14)

TABLE A-10

(RMN-14)

340002
36 44 15.0 108 24 15.0
SAN JUAN RIVER NEAR FRUITLAND
35 NEW MEXICO
COLORADO RIVER BASIN
MIDDLE COLORADO-SAN JUAN SUB BASIN
1118C030 2111204
2 0000 FEET DEPTH

DATE FROM TO	TIME OF DAY	DEPTH FEET	09503 RA-226 DISOLVED PC/L	09504 RA-226-D ERROR PC/L	22703 U-NAT DISOLVED UG/L
62/08/01			0.150		
62/08/06		COMP			
62/10/08			0.090		5.100
62/11/02		COMP			
62/11/05			0.150		7.000
62/12/01		COMP			
62/12/05			0.090		6.800
62/12/28		COMP			
62/12/31			0.080		6.600
63/01/07		COMP			
63/02/04			0.160		7.700
63/03/01		COMP			
63/03/04			0.210		9.000
63/03/29		COMP			
63/04/01			0.160		1.900
63/04/26		COMP			
63/04/29			0.130		3.200
63/05/31		COMP			
63/06/03			0.140		2.800
63/06/23		COMP			
63/07/01			0.150		2.700
63/07/22		COMP			
63/08/05			0.110		4.200
63/08/26		COMP			
63/09/03			0.090		2.600
63/09/23		COMP			
63/09/30			0.060		2.900
63/10/28		COMP			
63/10/28			0.040		2.200
63/11/26		COMP			
63/12/02			0.050		3.600
63/12/23		COMP			
63/12/30			0.050		2.500
64/01/27		COMP			
64/02/03			0.050		3.000
64/02/24		COMP			
64/03/02			0.050		2.000
64/03/23		COMP			
64/03/30			0.090		2.400
64/04/27		COMP			
64/05/03			0.090		2.100
64/05/26		COMP			
64/06/02			0.100		0.900
64/06/23		COMP			
64/06/30			0.060		1.600
64/07/28		COMP			
64/08/04			0.130		2.300
64/08/25		COMP			
64/09/01			0.060		3.500
64/09/29		COMP			
64/10/05			0.060		3.200
64/10/26		COMP			
64/11/02			0.060		4.000
64/11/23		COMP			
64/11/30			0.060		4.000
64/12/28		COMP			
65/01/04			0.110		2.000
65/01/25		COMP			
65/02/01			0.030		2.000
65/02/22		COMP			
65/03/01			0.050		2.600
65/03/29		COMP			
65/04/05			0.080		2.300
65/04/26		COMP			
65/05/03			0.080		1.700
65/05/24		COMP			
65/05/31			0.080		1.300
65/06/28		COMP			
65/07/05			0.060		1.500
65/07/26		COMP			
65/08/02			0.040		1.500
65/08/23		COMP			
65/08/30			0.030		2.400
65/09/27		COMP			
65/10/04			0.050		2.500
65/10/25		COMP			
65/11/01			J.040		0.400
65/11/22		COMP			
65/11/29			0.030		0.800
65/12/27		COMP			

TABLE A-10 (Cont.)

(RMN-14)

340002
36 44 15.0 108 24 15.0
SAN JUAN RIVER NEAR FRUITLAND
35 NEW MEXICO
COLORADO RIVER BASIN
MIDDLE COLORADO-SAN JUAN SUB BASIN
1118C030 2111204
2 0000 FEET DEPTH

DATE FROM TO	TIME OF DAY	DEPTH FEET	09503 RA-226 DISOLVED PC/L	09504 RA-226-D ERROR PC/L	22703 U-NAT DISOLVED UG/L
66/01/03			0.030		0.800
66/01/24		COMP			
66/01/31			0.040		1.500
66/02/20		COMP			
66/02/28			0.040		0.300
66/03/28		COMP			
66/04/04			0.060		1.200
66/04/25		COMP			
66/05/02			0.050		1.300
66/05/23		COMP			
66/05/30			0.060		0.800
66/06/27		COMP			
66/07/04			0.090		2.800
66/07/25		COMP			
66/08/01			0.050		3.000
66/08/29		COMP			
66/09/05			0.090		1.500
66/09/26		COMP			
66/10/03			0.040		1.600
66/10/24		COMP			
66/10/31			0.040		2.300
66/11/14		COMP			
66/12/05			0.050		2.600
66/12/19		COMP			
66/12/26			0.040		6.100
67/01/02			0.050		2.100
67/01/23		COMP			
67/01/30			0.040		3.100
67/02/20		COMP			
67/02/27			0.040		2.300
67/03/27		COMP			
67/04/10			0.050		3.200
67/04/24		COMP			
67/05/01			0.060		2.500
67/05/22		COMP			
67/05/29			0.040		2.600
67/06/26		COMP			
67/07/03			0.090		5.100
67/07/24		COMP			
67/07/31			0.090		4.100
67/08/28		COMP			
67/09/04			0.070		3.700
67/09/25		COMP			
67/10/02	10 00				
CP(T)-03			0.050	0.010	4.300
67/10/23	10 00				
67/10/30	10 00				
CP(T)-04			0.110	0.010	4.100
67/11/27	10 00				
67/12/04	10 00				
CP(T)-04			0.070	0.010	3.400
67/12/25	10 00				
68/01/01	10 00				
CP(T)-04			0.080	0.010	3.700
68/01/29	10 00				
68/02/05	10 00				
CP(T)-03			0.050	0.010	2.700
68/02/26	10 00				
68/03/04	10 00				
CP(T)-04			0.060	0.010	3.200
68/03/25	10 00				
68/04/01	10 00				
CP(T)-04			0.070	0.010	1.700
68/04/22	10 00				
68/04/21	10 00				
CP(T)-04			0.050	0.010	1.400
68/05/27	10 00				
68/06/03	10 00				
CP(T)-03			0.070	0.010	0.800
68/06/24	10 00				
68/07/03			0.080	0.010	2.900
68/08/01		COMP			
68/08/13	10 00				
CP(T)-02			0.050	0.010	2.300
68/08/27	10 00				
68/09/11			0.060	0.010	4.100
68/09/24		COMP			
68/10/08			0.050	0.010	4.500
68/10/19		COMP			
68/11/04			0.050	0.010	4.500
68/11/20		COMP			

TABLE A-10 (Cont.)

(RMN-14)

340002
36 44 15.0 108 24 15.0
SAN JUAN RIVER NEAR FRUITLAND
35 NEW MEXICO
COLORADO RIVER BASIN
MIDDLE COLORADO-SAN JUAN SUB BASIN
1118C030 2111204
2 0000 FEET DEPTH

DATE FROM TO	TIME OF DAY	DEPTH FEET	09503 RA-226 DISOLVED PC/L	09504 RA-226-D ERROR PC/L	22703 U-NAT DISOLVED UG/L
68/12/18			0.030	0.010	2.700
69/01/21			0.040	0.010	2.400
69/02/26			0.060	0.010	3.000
69/03/26			0.080	0.010	4.200
69/04/23			0.040	0.010	3.100
69/05/29			0.050	0.010	2.300
69/06/24			0.050	0.010	1.500
69/07/27			0.060	0.010	2.500
69/09/03			0.070	0.010	3.000

STATION DESCRIPTION

(RMN-14S)

340003
36 47 52.0 108 43 52.0
SAN JUAN RIVER DWS OF SHIPROCK
35 NEW MEXICO
COLORADO RIVER BASIN
MIDDLE COLORADO-SAN JUAN SUB BASIN
1118C030 2111204
2 0000 FEET DEPTH

	RIVER SYSTEM	II	III	IV	V	VI	VII	VIII	IX	X	XI	XII
INDEX	1101001	009420										
MILES	0789.60	0216.20	.	.	.	.	.	.	.	.	.	.

DESCRIPTION

CRRP NO. RMN-14S. USGS-09-368000
NE1/4. SW1/4. SEC 22. T30N. R18W

SAMPLED 500FT DOWNSTREAM OF HWY 666 BRIDGE UNTIL 08/66. THEN SAMPLED DWS OF VANADIUM CORP OF AMERICA MILL 3.5MI.. 3MI. WEST OF SHIPROCK 10/69 TILL 07/71

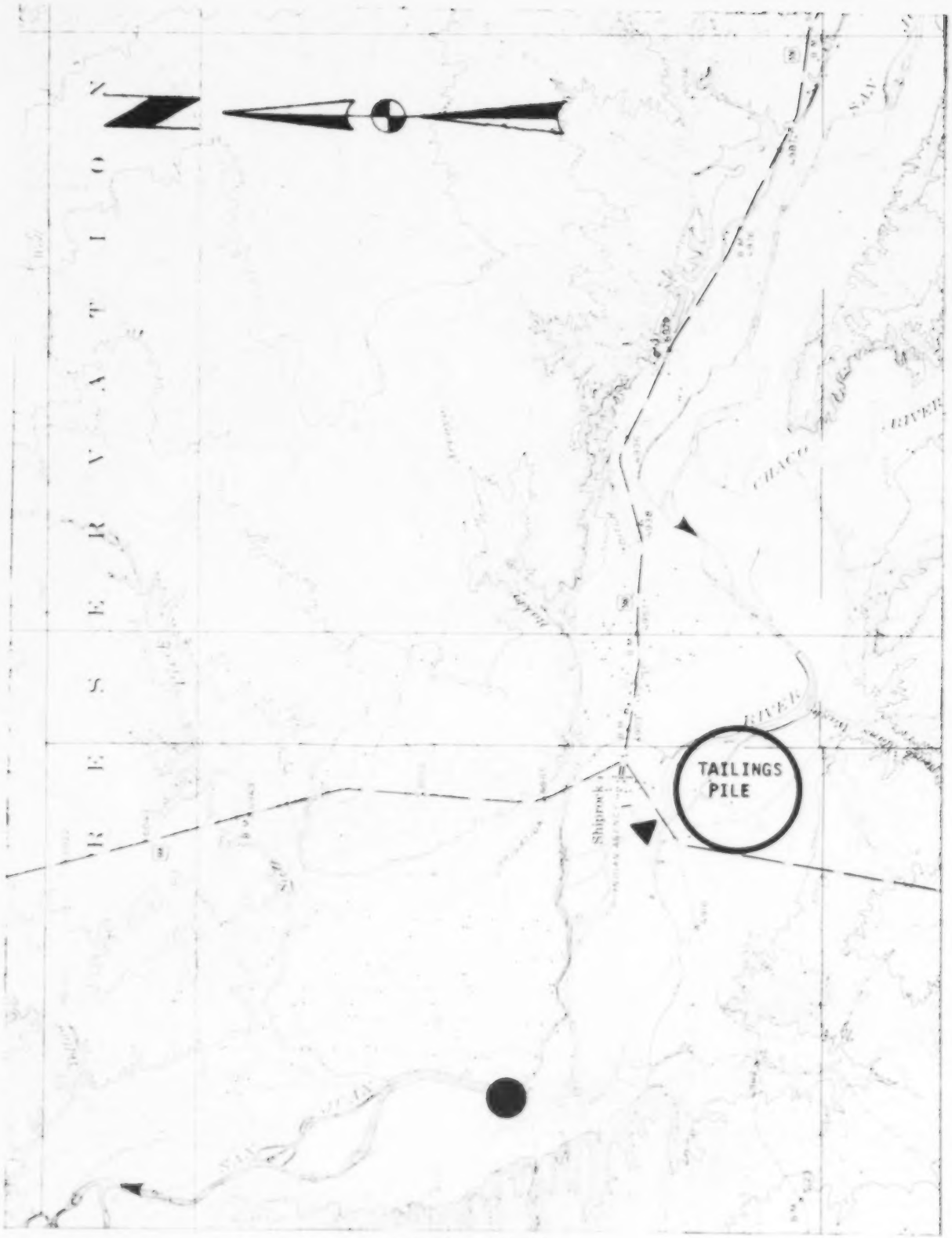
TYPE DATA-RAD.BACT: GRAB. 1 GAL/WEEK. PRIOR TO 7/1/64. 1 GAL/WEEK AUT

TYPE FLOW MEAS-WTR STG REC AT 09368000

SAMPLING STARTED 7/09/62 AND ENDED 7/19/71. SAMPLING RESUMED BY EPA & N-MEXICO. REMARKS: THERE WERE NO DIRECT WASTE DISCHARGES FROM THE MILL. BUT 4SEEPS CARRIED WASTE. HOLDING POND LIQUIDS TO THE RIVER. NO NEW DATA

Number of Samples assayed for Ra-226 through period of record (1961-1972): 1/9
Mean Ra-226 concentration for period of record and 2σ deviation : 0.08 ± 0.10

Number of Samples assayed for U(total) through period of record (1962-1972): 175
Mean U(total) concentration for period of record and 2σ deviation : 8.49 ± 21.72



STATION LOCATION
(RMW-14S)

TABLE A-11

(RMN-14S)

340003
36 47 52.0 108 43 52.0
SAN JUAN RIVER DWS OF SHIPROCK
35 NEW MEXICO
COLORADO RIVER BASIN
MIDDLE COLORADO-SAN JUAN SUB BASIN
1118C030 2111204
2 0000 FEET DEPTH

DATE FROM TO	TIME OF DAY	DEPTH FEET	09503 RA-226 DISOLVED PC/L	09504 RA-226-D ERROR PC/L	22703 U-NAT DISOLVED UG/L
62/07/09			0.160		
62/07/30		COMP			
62/08/07			0.150		
62/08/20		COMP			
62/09/14			0.130		
62/09/21		COMP			
62/09/24			0.150		
62/10/01		COMP			
62/10/01			0.090		8.300
62/11/02		COMP			
62/11/05			0.080		11.000
62/12/03		COMP			
62/12/05			0.040		13.000
62/12/26		COMP			
62/12/31			0.060		12.000
63/01/07		COMP			
63/02/04			0.110		16.000
63/03/01		COMP			
63/03/04			0.200		14.000
63/03/29		COMP			
63/04/01			0.160		2.300
63/04/26		COMP			
63/04/29			0.140		11.000
63/05/31		COMP			
63/06/03			0.160		7.500
63/06/23		COMP			
63/07/02			0.260		17.000
63/07/08		COMP			
63/07/08			0.280		26.000
63/07/10		COMP			
63/07/10			0.180		22.000
63/07/15		COMP			
63/07/15			0.200		15.000
63/07/22		COMP			
63/07/29			0.280		28.000
63/08/05		COMP			
63/08/05			0.190		16.000
63/08/12		COMP			
63/08/12			0.250		13.000
63/08/19		COMP			
63/08/26			0.110		9.900
63/08/30		COMP			
63/09/03			0.090		8.800
63/09/06		COMP			
63/09/09			0.140		16.000
63/09/13		COMP			
63/09/16			0.120		28.000
63/09/20		COMP			
63/09/23			0.060		8.200
63/09/27		COMP			
63/09/30			0.080		15.000
63/10/04		COMP			
63/10/07			0.110		30.000
63/10/11		COMP			
63/10/14			0.050		15.000
63/10/18		COMP			
63/10/21			0.080		10.000
63/10/25		COMP			
63/10/28			0.080		22.000
63/11/01		COMP			
63/11/04			0.090		20.000
63/11/08		COMP			
63/11/12			0.040		21.000
63/11/16		COMP			
63/11/18			0.090		18.000
63/11/22		COMP			
63/11/22			0.050		3.000
63/12/02		COMP			
63/12/02			0.060		6.300
63/12/09		COMP			
63/12/11			0.040		18.000
63/12/16		COMP			
63/12/18			0.040		17.000
63/12/20		COMP			
63/12/23			0.060		15.000
63/12/30		COMP			
63/12/30			0.090		12.000
64/01/16		COMP			
64/01/16			0.080		21.000
64/01/20		COMP			

TABLE A-11 (Cont.)

(RMN-14S)

340003
36 47 52.0 108 43 52.0
SAN JUAN RIVER DWS OF SHIPROCK
35 NEW MEXICO
COLORADO RIVER BASIN
MIDDLE COLORADO-SAN JUAN SUB BASIN
1118C030 2111204
2 0000 FEET DEPTH

DATE FROM TO	TIME OF DAY	DEPTH FEET	09503 RA-226 DISOLVED PC/L	09504 RA-226-D ERROR PC/L	22703 U-NAT DISOLVED UG/L
64/01/20			0.080		13.000
64/01/24		COMP			
64/01/27			0.050		12.000
64/01/31		COMP			
64/02/03			0.210		3.400
64/02/05		COMP			
64/02/10			0.050		3.500
64/02/12		COMP			
64/02/24			0.050		3.200
64/02/28		COMP			
64/03/02			0.060		2.900
64/03/06		COMP			
64/03/09			0.040		2.900
64/03/11		COMP			
64/03/16			0.050		2.700
64/03/18		COMP			
64/03/23			0.060		2.200
64/03/27		COMP			
64/04/01			0.110		1.800
64/04/15			0.110		40.000
64/04/22			0.110		36.000
64/04/29			0.260		93.000
64/05/11			0.130		67.000
64/05/14			0.100		16.000
64/05/20			0.110		3.800
64/05/27			0.080		2.100
64/06/03			0.130		8.800
64/06/10			0.110		13.000
64/06/18			0.110		2.300
64/06/24			0.110		3.500
64/07/08			0.110		8.400
64/07/15			0.060		5.600
64/07/22			0.100		6.800
64/07/29			0.080		5.000
64/08/06			0.060		5.500
64/08/12			0.100		3.000
64/08/19			0.080		5.500
64/08/26			0.100		7.600
64/09/02			0.110		14.000
64/09/06		COMP			
64/09/09			0.100		16.000
64/09/13		COMP			
64/09/15			0.060		9.100
64/09/19		COMP			
64/09/22			0.100		7.800
64/09/26		COMP			
64/09/30			0.060		7.500
64/10/04		COMP			
64/10/07			0.060		11.000
64/10/11		COMP			
64/10/14			0.090		16.000
64/10/18		COMP			
64/10/21			0.080		22.000
64/10/25		COMP			
64/10/28			0.080		21.000
64/11/01		COMP			
64/11/05			0.080		28.000
64/11/09		COMP			
64/11/10			0.050		32.000
64/11/14		COMP			
64/11/19			0.060		8.900
64/11/23		COMP			
64/11/25			0.080		13.000
64/11/29		COMP			
64/12/02			0.090		12.000
64/12/09			0.050		15.000
64/12/16			0.080		14.000
64/12/23			0.050		13.000
64/12/30			0.030		5.000
65/01/06			0.080		6.300
65/01/12			0.060		7.900
65/01/20			0.080		3.500
65/01/27			0.080		2.600
65/02/03			0.070		2.000
65/02/10			0.140		3.500
65/02/17			0.060		3.300
65/02/24			0.050		2.900
65/03/03			0.050		4.600
65/03/10			0.060		4.000

TABLE A-11 (Cont.)

(RMN-14S)

DATE FROM TO	TIME OF DAY	DEPTH FEET	09503 RA-226 DISOLVED PC/L	09504 RA-226-D ERROR PC/L	22703 U-NAT DISOLVED UG/L
65/03/17			0.140		8.400
65/03/24			0.080		7.900
65/03/31			0.060		5.800
65/04/07			0.060		5.000
65/04/14			0.090		5.300
65/04/21			0.050		3.200
65/04/28			0.050		2.600
65/05/05			0.090		4.300
65/05/13			0.090		2.400
65/05/26			0.110		1.900
65/06/02			0.040		2.700
65/06/09			0.080		2.000
65/06/16			0.050		1.800
65/06/23			0.080		2.900
65/06/30			0.050		2.800
65/07/07			0.040		1.400
65/07/13		COMP			
65/07/14			0.080		1.300
65/07/20		COMP			
65/07/21			0.060		4.300
65/07/27		COMP			
65/07/28			0.050		3.800
65/08/01		COMP			
65/08/02			0.080		1.800
65/08/08		COMP			
65/08/09			0.040		3.200
65/08/15		COMP			
65/08/16			0.040		3.000
65/08/23		COMP			
65/08/24			0.050		5.000
65/08/29		COMP			
65/08/30			0.050		8.100
65/09/06		COMP			
65/09/07			0.050		6.100
65/09/12		COMP			
65/09/13			0.080		4.400
65/09/16		COMP			
65/09/17			0.050		4.400
65/09/26		COMP			
65/09/27			0.050		4.200
65/10/03		COMP			

340003
36 47 52.0 108 43 52.0
SAN JUAN RIVER DWS OF SHIPROCK
35 NEW MEXICO 1
COLORADO RIVER BASIN
MIDDLE COLORADO-SAN JUAN SUB BASIN
1118C030 2111204
2 0000 FEET DEPTH

DATE FROM TO	TIME OF DAY	DEPTH FEET	09503 RA-226 DISOLVED PC/L	09504 RA-226-D ERROR PC/L	22703 U-NAT DISOLVED UG/L
65/10/04			0.040		5.600
65/10/10		COMP			
65/10/11			0.030		7.200
65/10/17		COMP			
65/10/18			0.090		4.300
65/10/24		COMP			
65/10/25			0.040		4.200
65/10/31		COMP			
65/11/01			0.060		2.600
65/11/07		COMP			
65/11/08			0.040		1.600
65/11/14		COMP			
65/11/15			0.050		1.800
65/11/21		COMP			
65/11/22			0.050		0.700
65/11/28		COMP			
65/11/29			0.060		2.900
65/12/05		COMP			
65/12/06			0.060		2.900
65/12/12		COMP			
65/12/13			0.050		2.000
65/12/19		COMP			
65/12/20			0.040		2.000
65/12/26		COMP			
65/12/27			0.050		3.000
66/01/02		COMP			
66/01/03			0.030		1.300
66/01/09		COMP			
66/01/10			0.090		2.200
66/01/16		COMP			
66/01/17			0.030		2.800
66/01/24		COMP			
66/01/25			0.030		3.500
66/01/30		COMP			
66/01/31			0.050		2.900
66/02/06		COMP			
66/02/07			0.030		6.400
66/02/13		COMP			
66/02/14			0.040		4.700
66/02/20		COMP			

TABLE A-11 (Cont.)

(RMN-14S)

340003
36 47 52.0 108 43 52.0
SAN JUAN RIVER DWS OF SHIPROCK
35 NEW MEXICO
COLORADO RIVER BASIN
MIDDLE COLORADO-SAN JUAN SUB BASIN
1118C030 2111204
2 0000 FEET DEPTH

DATE FROM TO	TIME OF DAY	DEPTH FEET	09503 RA-226 DISOLVED PC/L	09504 RA-226-D ERROR PC/L	22703 U-NAT DISOLVED UG/L
66/02/21			0.030		1.200
66/02/27		COMP			
66/02/28			0.040		0.100
66/03/06		COMP			
66/03/07			0.040		0.300
66/03/14		COMP			
66/03/15			0.060		0.100
66/03/20		COMP			
66/03/21			0.060		0.400
66/03/27		COMP			
66/03/28			0.040		2.200
66/04/03		COMP			
66/04/04			0.040		2.400
66/04/10		COMP			
66/04/11			0.040		2.300
66/04/17		COMP			
66/05/02			0.030J		1.400
66/05/09			0.080		0.600
66/05/16			0.060J		1.300
66/05/23			0.060		1.100
66/05/31			0.050		1.500
66/06/06			0.060		1.400
66/06/14			0.080		2.200
66/06/20			0.050		2.100
66/06/27			0.080		2.400
66/07/11			0.060		3.500
66/07/25		COMP			
66/08/15			0.100		4.600
66/08/22			0.050		3.000
69/10/15			0.060	0.010	2.100
69/11/19			0.100	0.020	3.200
69/12/10			0.080	0.010	3.400
70/01/13			0.040	0.010	4.500
70/02/10			0.040	0.010	6.200
70/03/10			0.030	0.010	2.200
70/04/14			0.150	0.020	5.000
70/05/12			0.050	0.010	3.400
70/06/09			0.060	0.010	4.200
70/07/14			0.090	0.020	3.600
70/10/14			0.040	0.010	1.000
71/01/21			0.040	0.010	1.100
71/04/20			0.050	0.010	1.700
71/07/19			0.140		3.200

STATION DESCRIPTION

(RMN-15)

490002
37 08 49.0 109 51 51.0
SAN JUAN RIVER UPS MEXICAN HAT
49 UTAH
COLORADO RIVER BASIN
MIDDLE COLORADO-SAN JUAN SUB BASIN
111AC030 2111204
2 0000 FEET DEPTH

	RIVER SYSTEM	II	III	IV	V	VI	VII	VIII	IX	X	XI	XII
INDEX	1101001	0094200										
MILES	0789.60	0114.09	•	•	•	•	•	•	•	•	•	•

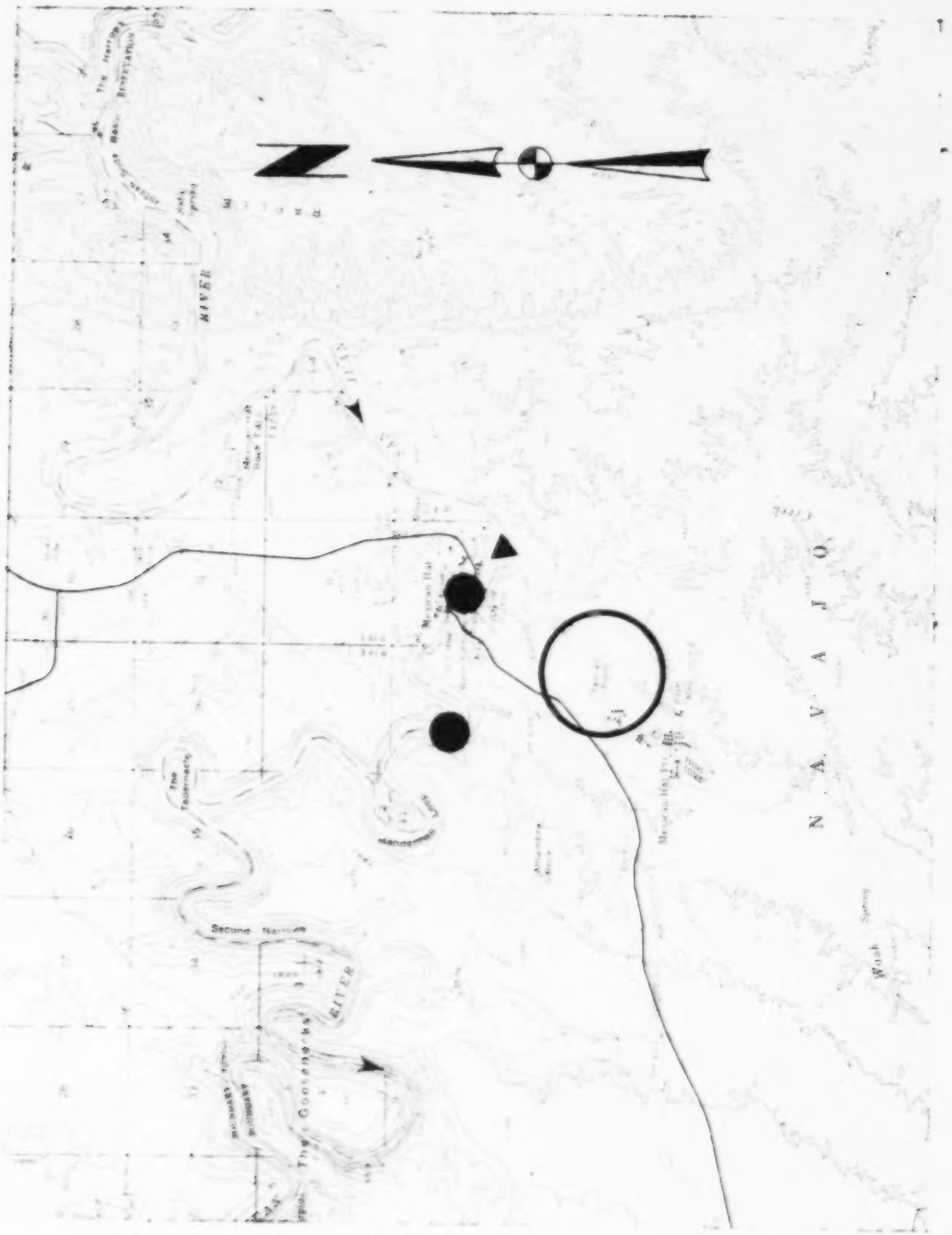
DESCRIPTION

CRMP NO. RMN-15;RWS-30; USGS-09-379500
NE1/4, SW1/4, SEC 7, T42S, R19E

SAMPLED 1/2MI. UPS HWY 47 BRIDGE;UPS MOUTH GYPSUM WASH TILL 07/69.
NOW SAMPLED 1800FT UPS FROM HWY 47 BRIDGE AT 09379500
TYPE DATA-RAD; GRAM, 3 PINTS/WEEK
TYPE FLOW MEAS-MIN SIG REC AT 09379500
SAMPLING STARTED 12/11/61 AND IS ONGOING
REMARKS: THIS STATION PROVIDED RADIOACTIVITY DATA UPSTREAM FROM THE AZ MINERALS MILL NEAR MEXICAN HAT.

Number of Samples assayed for Ra-226 through period of record (1961-1972): 87
Mean Ra-226 concentration for period of record and 2σ deviation : 0.13 ± 0.43

Number of Samples assayed for U(total) through period of record (1962-1972): 80
Mean U(total) concentration for period of record and 2σ deviation : 5.44 ± 6.63



STATION LOCATIONS
(RMN-15;RMN-16)

TABLE A-12

(RMN-15)

490002
37 08 49.0 109 51 51.0
SAN JUAN RIVER UPS MEXICAN HAT
49 UTAH
COLORADO RIVER BASIN
MIDDLE COLORADO-SAN JUAN SUB BASIN
1118C030 2111204
2 0000 FEET DEPTH

DATE FROM TO	TIME OF DAY	DEPTH FEET	09503 RA-226 DISOLVED PC/L	09504 RA-226-D ERROR PC/L	22703 U-NAT DISOLVED UG/L
61/12/11			1.800		
61/12/30		COMP			
62/01/01			0.160		
62/01/27		COMP			
62/03/05			0.140		
62/03/31		COMP			
62/04/02			0.080		
62/04/28		COMP			
62/04/30			0.100		
62/06/02		COMP			
62/06/04			0.100		
62/06/30		COMP			
62/07/02			0.150		
62/07/28		COMP			
62/10/01			0.140		8.700
62/11/03		COMP			
62/11/05			0.100		9.000
62/12/01		COMP			
62/12/03			0.090		9.800
62/12/29		COMP			
62/12/31			0.080		13.000
63/02/02		COMP			
63/02/04			0.100		8.900
63/03/02		COMP			
63/03/04			0.150		11.000
63/03/30		COMP			
63/04/01			0.140		5.700
63/04/27		COMP			
63/04/29			0.100		5.900
63/06/01		COMP			
63/06/03			0.110		5.700
63/06/29		COMP			
63/07/01			0.200		11.000
63/08/03		COMP			
63/08/05			0.260		12.000
63/08/31		COMP			
63/09/02			0.130		6.300
63/09/28		COMP			
63/09/30			0.130		7.600
63/11/02		COMP			
63/11/04			0.060		4.500
63/11/30		COMP			
63/12/02			0.080		6.800
63/12/27		COMP			
63/12/30			0.060		5.500
64/02/01		COMP			
64/02/03			0.060		6.200
64/02/29		COMP			
64/03/02			0.090		5.900
64/03/28		COMP			
64/03/30			0.090		7.900
64/05/02		COMP			
64/05/04			0.130		5.900
64/05/30		COMP			
64/06/01			0.110		2.600
64/06/27		COMP			
64/06/29			0.110		3.000
64/08/01		COMP			
64/08/03			0.130		5.800
64/08/29		COMP			
64/08/31			0.130		9.500
64/10/03		COMP			
64/10/05			0.650		23.000
64/10/31		COMP			
64/11/02			0.100		8.800
64/11/28		COMP			
64/11/30			0.060		7.800
64/01/02		COMP			
65/01/04			0.040		4.800
65/01/30		COMP			
65/02/01			0.060		3.700
65/02/27		COMP			
65/03/01			0.090		5.800
65/04/03		COMP			
65/04/05			0.050		4.000
65/05/01		COMP			
65/10/19			0.080		2.800
65/10/29		COMP			
65/11/02			0.080		2.100
65/11/27		COMP			

TABLE A-12 (Cont.)

(RMN-15)

DATE FROM TO	TIME OF DAY	DEPTH FEET	09503 RA-226 DISOLVED PC/L	09504 RA-226-D ERROR PC/L	22703 U-NAT DISOLVED UG/L
65/12/01			0.090		2.200
66/01/01		COMP			
66/01/04			0.050		2.600
66/01/29		COMP			
66/02/03			0.060		2.500
66/02/27		COMP			
66/03/01			0.080		3.300
66/03/31		COMP			
66/04/03			0.060		2.300
66/04/28		COMP			
66/04/30			0.040		1.400
66/05/27		COMP			
66/05/29			0.060		2.700
66/06/30		COMP			
66/07/02			0.110		5.000
66/07/29		COMP			
66/07/31			0.110		5.700
66/09/02		COMP			
66/09/04			0.100		6.700
66/09/29		COMP			
66/10/02			0.090		3.000
66/10/27		COMP			
66/10/30			0.090		2.900
66/12/01		COMP			
66/12/04			0.080		5.800
66/12/31		COMP			
66/12/29			0.050		6.300
67/01/03		COMP			
67/02/01			0.050		6.600
67/02/26		COMP			
67/03/01			0.050		4.300
67/03/30		COMP			
67/04/02			0.080		7.000
67/04/28		COMP			
67/04/30			0.070		6.400
67/05/25		COMP			
67/05/28			0.120		3.400
67/06/30		COMP			
67/07/02			0.120		6.800
67/07/28		COMP			

490002
37 08 49.0 109 51 51.0
SAN JUAN RIVER UPS MEXICAN HAT
49 UTAH
COLORADO RIVER BASIN
MIDDLE COLORADO-SAN JUAN SUB BASIN
1118C030 2111204
2 0000 FEET DEPTH

DATE FROM TO	TIME OF DAY	DEPTH FEET	09503 RA-226 DISOLVED PC/L	09504 RA-226-D ERROR PC/L	22703 U-NAT DISOLVED UG/L
67/07/30			0.080		6.100
67/09/01		COMP			
67/09/03	10 00				
CP(T)-12			0.100	0.010	5.200
67/09/30	10 00				
67/10/04	10 00				
CP(T)-12			0.090	0.010	8.500
67/10/29	10 00				
67/11/01	10 00				
CP(T)-12			0.060	0.010	6.600
67/12/03	10 00				
67/12/06	10 00				
CP(T)-12			0.080	0.010	6.200
67/12/29	10 00				
68/02/06	10 00				
CP(T)-12			0.090	0.010	6.000
68/03/01	10 00				
68/03/04	10 00				
CP(T)-04			0.080	0.010	6.900
68/03/29	10 00				
68/03/31	10 00				
CP(T)-04			0.070	0.010	4.300
68/04/26	10 00				
68/04/28	10 00				
CP(T)-18			0.150	0.020	2.400
68/05/31	10 00				
68/06/02	10 00				
CP(T)-12			0.050	0.010	1.000
68/06/28	10 00				
69/01/20			0.090	0.010	5.600
69/02/25			0.060	0.010	4.300
69/03/25			0.070	0.010	5.700
69/04/22			0.090	0.010	2.900
69/05/28			0.080	0.010	1.900
69/06/23			0.070	0.010	2.100
69/07/23			0.110	0.020	3.100
69/09/02			0.080	0.010	5.000
69/10/16			0.080	0.010	3.000
70/01/01			0.040	0.010	2.700
70/03/31		COMP			

TABLE A-12 (Cont.)

(RMN-15)

490002
37 08 49.0 109 51 51.0
SAN JUAN RIVER UPS MEXICAN HAT
49 UTAH
COLORADO RIVER BASIN
MIDDLE COLORADO-SAN JUAN SUB BASIN
1118C030 2111204
2 0000 FEET DEPTH

DATE FROM TO	TIME OF DAY	DEPTH FEET	09503 RA-226 DISOLVED PC/L	09504 RA-226-D ERROR PC/L	22703 U-NAT DISOLVED UG/L
70/04/16			0.050	0.010	3.900
70/10/21			0.050	0.010	1.300
71/01/18			0.040	0.010	1.500
71/04/20			0.060	0.010	4.000
71/10/06			1.000		3.800
72/01/13			0.100K		2.000
72/04/03			0.200		1.400

STATION DESCRIPTION

(RMN-16)

960003
37 04 00.0 109 52 45.0
SAN JUAN RIVER DWS MEXICAN HAT
49 UTAH
COLORADO RIVER BASIN
MIDDLE COLORADO-SAN JUAN SUB BASIN
11 1MC030 2111204
2 0000 FEET DEPTH

RIVER
SYSTEM II III IV V VI VII VIII IX X XI XII
INDEX 1101001 0094 20
MILES 0789.60 0111.00

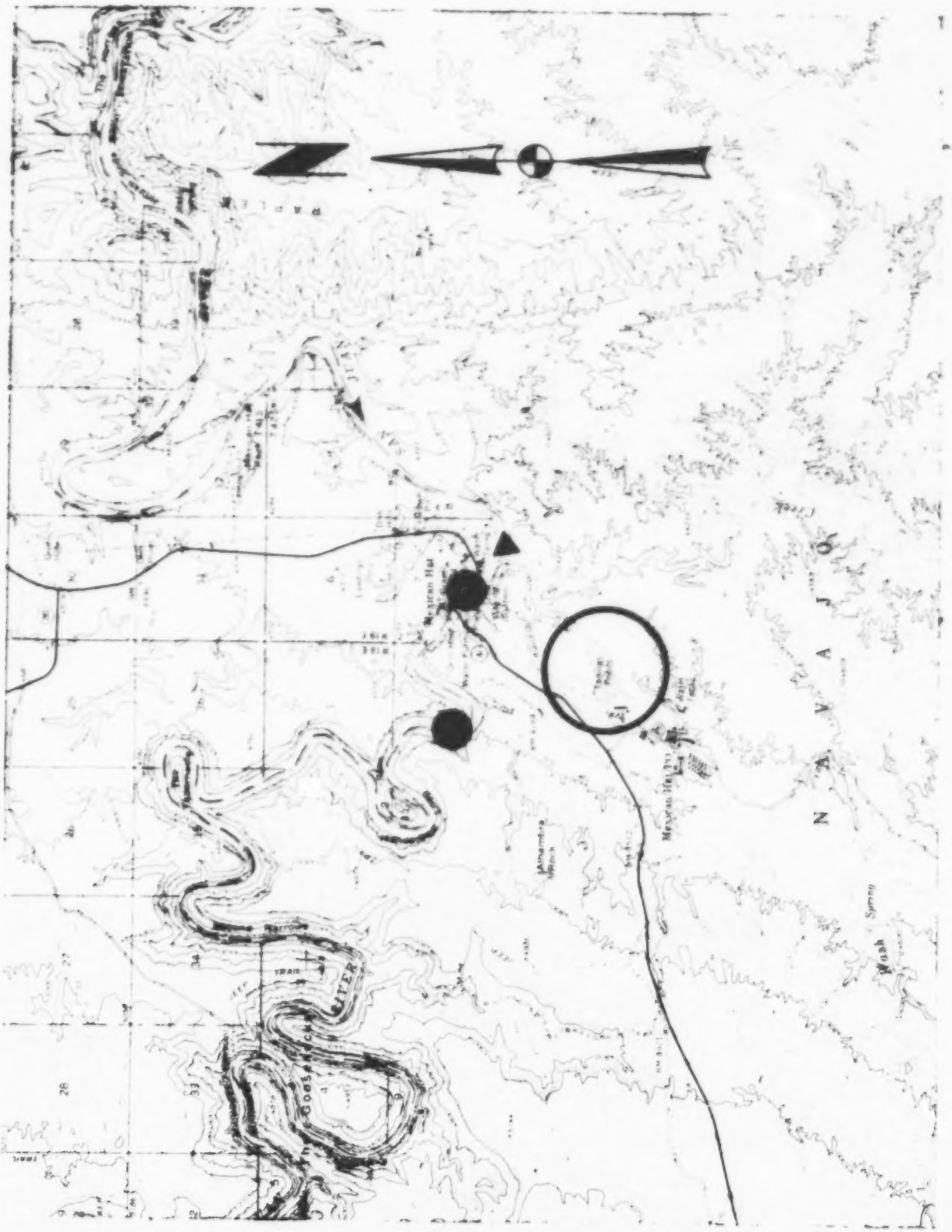
DESCRIPTION

CRBP NO. RMN-16, DWS-31, USGS-09-379500
SE1/4, NW1/4, SEC 12, T42S, R18E

SAMPLED 1/2 MILE DOWNSTREAM FROM THE AZ MINERALS URANIUM MILL EFFLUENT DISCHARGE IN SAN JUAN COUNTY
TYPE DATA-RAD, BACT: GRAB, 3 PINTS/WEEK
TYPE FLOW MEAS-WIR STG REC AT 09379500
SAMPLING STARTED 12/11/61 AND ENDED 10/21/70
REMARKS: PRIOR TO 6/1/65 SAMPLE WAS A GRAB OF 6 PINTS/WEEK

Number of Samples assayed for Ra-226 through period of record (1961-1972): 166
Mean Ra-226 concentration for period of record and 2σ deviation : 0.17 ± 1.39

Number of Samples assayed for U(total) through period of record (1962-1972): 146
Mean U(total) concentration for period of record and 2σ deviation : 8.07 ± 11.89



STATION LOCATIONS
(RMN-15;RMN-16)

TABLE A-13

(RMN-16)

490003
37 09 00.0 109 52 45.0
SAN JUAN RIVER DWS MEXICAN HAT
49 UTAH
COLORADO RIVER BASIN
MIDDLE COLORADO-SAN JUAN SUB BASIN
1118C030 2111204
2 0000 FEET DEPTH

DATE FROM TO	TIME OF DAY	DEPTH FEET	09503 RA-226 DISOLVED PC/L	09504 RA-226-D ERROR PC/L	22703 U-NAT DISOLVED UG/L
61/12/11			0.330		
61/12/30		COMP			
62/01/01			0.140		
62/01/27		COMP			
62/01/29			0.120		
62/03/03		COMP			
62/03/05			0.090		
62/03/31		COMP			
62/04/02			0.100		
62/04/28		COMP			
62/04/30			0.060		
62/06/02		COMP			
62/06/04			0.090		
62/06/30		COMP			
62/07/02			0.290		
62/07/28		COMP			
62/07/30			0.460		
62/08/11		COMP			
62/08/13			0.280		
62/08/14		COMP			
62/08/15			0.390		
62/08/16			0.360		
62/08/17			0.260		
62/08/18			0.180		
62/08/20			0.280		
62/08/21			0.540		
62/09/01		COMP			
62/09/03			0.210		
62/09/08		COMP			
62/09/10			0.210		
62/09/15		COMP			
62/09/17			0.240		
62/09/22		COMP			
62/09/24			0.350		
62/09/29		COMP			
62/10/01			0.190		10.000
62/11/03		COMP			
62/11/05			0.150		11.000
62/12/01		COMP			
63/02/04			0.120		15.000
63/03/02		COMP			
63/03/04			0.280		12.000
63/03/30		COMP			
63/04/01			9.000		14.000
63/04/27		COMP			
63/04/29			0.100		6.200
63/06/01		COMP			
63/06/03			0.110		6.000
63/06/29		COMP			
63/07/01			0.250		11.000
63/07/06		COMP			
63/07/08			0.260		7.600
63/07/13		COMP			
63/07/15			0.110		14.000
63/07/20		COMP			
63/07/22			0.840		0.800
63/07/27		COMP			
63/07/29			0.400		13.000
63/08/03		COMP			
63/08/05			0.210		11.000
63/08/10		COMP			
63/08/12			0.190		7.600
63/08/17		COMP			
63/08/19			0.180		14.000
63/08/24		COMP			
63/08/26			0.200		6.200
63/08/31		COMP			
63/09/02			0.160		8.700
63/09/07		COMP			
63/09/09			0.120		8.000
63/09/14		COMP			
63/09/16			0.140		17.000
63/09/21		COMP			
63/09/23			0.140		13.000
63/09/28		COMP			
63/09/30			0.080		12.000
63/10/05		COMP			
63/10/07			0.060		14.000
63/10/12		COMP			
63/10/14			0.130		9.100
63/10/20		COMP			

TABLE A-13 (Cont.)

(RMN-16)

490003
37 09 00.0 109 52 45.0
SAN JUAN RIVER DWS MEXICAN HAT
49 UTAH
COLORADO RIVER BASIN
MIDDLE COLORADO-SAN JUAN SUB BASIN
1118C030 2111204
2 0000 FEET DEPTH

DATE FROM TO	TIME OF DAY	DEPTH FEET	09503 RA-226 DISOLVED PC/L	09504 RA-226-D ERROR PC/L	22703 U-NAT DISOLVED UG/L
63/10/21			0.110		7.900
63/10/26		COMP			
63/10/28			0.090		6.600
63/11/02		COMP			
63/11/04			0.060		4.400
63/11/09		COMP			
63/11/11			0.040		8.100
63/11/16		COMP			
63/11/18			0.050		5.200
63/11/23		COMP			
63/11/24			0.030		9.300
63/11/30		COMP			
63/12/02			0.090		7.400
63/12/07		COMP			
63/12/09			0.060		7.800
63/12/14		COMP			
63/12/16			0.100		8.100
63/12/21		COMP			
63/12/23			0.040		5.900
63/12/28		COMP			
63/12/30			0.060		5.500
64/01/04		COMP			
64/01/06			0.040		4.900
64/01/11		COMP			
64/01/13			0.080		11.000
64/01/18		COMP			
64/01/20			0.060		7.900
64/01/25		COMP			
64/01/27			0.060		8.400
64/02/01		COMP			
64/02/03			0.160		14.000
64/02/08		COMP			
64/02/10			0.080		6.700
64/02/15		COMP			
64/02/17			0.130		11.000
64/02/22		COMP			
64/02/24			0.160		15.000
64/02/27		COMP			
64/03/02			0.060		9.400
64/03/07		COMP			
64/03/09			0.050		8.700
64/03/14		COMP			
64/03/16			0.050		8.700
64/03/21		COMP			
64/03/23			0.080		8.400
64/03/28		COMP			
64/03/30			0.050		8.100
64/04/03		COMP			
64/04/06			0.090		9.600
64/04/11		COMP			
64/04/13			0.090		8.200
64/04/18		COMP			
64/04/20			0.110		8.100
64/04/25		COMP			
64/04/27			0.090		8.500
64/05/02		COMP			
64/05/04			0.050		11.000
64/05/09		COMP			
64/05/18			0.150		8.200
64/05/23		COMP			
64/05/25			0.090		7.600
64/05/30		COMP			
64/06/01			0.100		4.500
64/06/06		COMP			
64/06/08			0.090		3.200
64/06/13		COMP			
64/06/15			0.080		2.000
64/06/20		COMP			
64/06/22			0.080		3.900
64/06/27		COMP			
64/06/29			0.110		3.000
64/07/04		COMP			
64/07/06			0.180		3.600
64/07/11		COMP			
64/07/13			0.100		2.900
64/07/18		COMP			
64/07/20			0.090		3.200
64/07/25		COMP			
64/07/27			0.080		3.700
64/08/01		COMP			

TABLE A-13 (Cont.)

(RMN-16)

490003
37 09 00.0 109 52 45.0
SAN JUAN RIVER DWS MEXICAN HAT
49 UTAH
COLORADO RIVER BASIN
MIDDLE COLORADO-SAN JUAN SUB BASIN
1118C030 2111204
2 0000 FEET DEPTH

DATE FROM TO	TIME OF DAY	DEPTH FEET	09503 RA-226 DISOLVED PC/L	09504 RA-226-D ERROR PC/L	22703 U-NAT DISOLVED UG/L
64/08/03		COMP	0.080		4.900
64/08/08		COMP	0.090		6.000
64/08/10		COMP	0.110		6.200
64/08/15		COMP	0.180		6.200
64/08/17		COMP	0.100		9.200
64/08/22		COMP	0.010		35.000
64/08/24		COMP	0.140		10.000
64/08/29		COMP	0.140		14.000
64/08/31		COMP	0.130		13.000
64/09/05		COMP	0.030		20.000
64/09/07		COMP	0.060		33.000
64/09/12		COMP	0.060		15.000
64/09/14		COMP	0.340		27.000
64/09/19		COMP	0.030		24.000
64/09/21		COMP	0.050		21.000
64/09/26		COMP	0.090		14.000
64/09/28		COMP	0.050		17.000
64/10/03		COMP	0.040		16.000
64/10/05		COMP	0.030		30.000
64/10/10		COMP	0.160		7.000
64/10/12		COMP			
64/10/17		COMP			
64/10/19		COMP			
64/10/24		COMP			
64/10/26		COMP			
64/10/31		COMP			
64/11/02		COMP			
64/11/07		COMP			
64/11/09		COMP			
64/11/14		COMP			
64/11/16		COMP			
64/11/21		COMP			
64/11/23		COMP			
64/11/28		COMP			
64/11/30		COMP			
64/12/05		COMP			
64/12/07		COMP			
64/12/12		COMP			
64/12/14		COMP			
64/12/19		COMP			
64/12/21		COMP	0.080		8.500
64/12/26		COMP			
64/12/28		COMP	0.050		10.000
65/01/02		COMP			
65/01/04		COMP	0.060		6.900
65/01/09		COMP			
65/01/11		COMP	0.050		5.200
65/01/16		COMP			
65/01/18		COMP	0.050		4.800
65/01/23		COMP			
65/01/25		COMP	0.030		4.300
65/01/30		COMP			
65/02/01		COMP	0.040		4.300
65/02/06		COMP			
65/02/08		COMP	0.060		3.500
65/02/13		COMP			
65/02/15		COMP	0.080		5.900
65/02/20		COMP			
65/02/22		COMP	0.060		4.500
65/02/27		COMP			
65/03/01		COMP	0.090		4.600
65/03/06		COMP			
65/03/08		COMP	0.060		8.800
65/03/13		COMP			
65/03/15		COMP	0.100		26.000
65/03/20		COMP			
65/03/22		COMP	0.090		7.500
65/03/27		COMP			
65/03/29		COMP	0.080		5.500
65/04/03		COMP			
65/04/05		COMP	0.060		4.200
65/04/10		COMP			
65/04/12		COMP	0.060		4.000
65/04/17		COMP			
65/04/19		COMP	0.060		4.000
65/04/24		COMP			
65/04/26		COMP	0.060		2.300
65/05/01		COMP			
65/10/19		COMP	0.060		3.600
65/10/29		COMP			

TABLE A-13 (Cont.)

(RMN-16)

490003
37 09 00.0 109 52 45.0
SAN JUAN RIVER DWS MEXICAN HAT
49 UTAH
COLORADO RIVER BASIN
MIDDLE COLORADO-SAN JUAN SUB BASIN
1118C030 2111204
2 0000 FEET DEPTH

DATE FROM TO	TIME OF DAY	DEPTH FEET	09503 RA-226 DISOLVED PC/L	09504 RA-226-D ERROR PC/L	22703 U-NAT DISOLVED UG/L
65/11/02			0.060		2.200
65/11/27		COMP			
65/12/01			0.090		2.500
66/01/01		COMP			
66/01/04			0.080		2.800
66/01/29		COMP			
66/02/01			0.060		2.800
66/02/27		COMP			
66/03/01			0.080		3.300
66/03/31		COMP			
66/04/03			0.060		2.200
66/04/28		COMP			
66/04/30			0.040		1.500
66/05/27		COMP			
66/05/29			0.050		3.300
66/06/30		COMP			
66/07/02			0.090		5.000
66/07/29		COMP			
66/07/31			0.140		6.500
66/09/02		COMP			
66/09/04			0.090		5.100
66/09/29		COMP			
66/10/02			0.090		3.500
66/10/27		COMP			
66/10/30			0.060		3.500
66/12/01		COMP			
66/12/04			0.050		5.700
66/12/31		COMP			
66/12/29			0.080		5.200
67/01/22		COMP			
67/02/01			0.050		4.400
67/02/26		COMP			
67/03/01			0.060		4.100
67/03/30		COMP			
67/04/02			0.080		7.000
67/04/28		COMP			
67/04/30			0.060		6.600
67/05/25		COMP			
67/05/28			0.090		4.300
67/06/30		COMP			
67/07/02			0.120		7.000
67/07/28		COMP			
67/07/30			0.100		5.900
67/09/01		COMP			
67/09/03	10 00				
CP(T)-12			0.100	0.010	5.800
67/09/30	10 00				
67/10/04	10 00				
CP(T)-12			0.100	0.010	9.000
67/10/29	10 00				
67/11/01	10 00				
CP(T)-12			0.070	0.010	8.300
67/12/03	10 00				
67/12/06	10 00				
CP(T)-12			0.060	0.010	5.800
67/12/29	10 00				
68/02/06	10 00				
CP(T)-12			0.080	0.010	6.600
68/03/01	10 00				
68/03/04	10 00				
CP(T)-04			0.060	0.010	6.300
68/03/29	10 00				
68/03/31	10 00				
CP(T)-04			0.060	0.010	5.000
68/04/26	10 00				
68/04/28	10 00				
CP(T)-12			0.100	0.010	2.800
68/05/31	10 00				
68/06/02	10 00				
CP(T)-12			0.060	0.010	1.200
68/06/28	10 00				
69/01/20			0.100	0.010	5.800
69/02/25			0.050	0.010	3.600
69/03/25			0.070	0.010	6.100
69/04/22			0.090	0.010	3.600
69/06/23			0.060	0.010	2.100
69/07/23			0.130	0.020	3.200
69/09/02			0.100	0.020	5.000
69/10/16			0.050	0.010	3.200

TABLE A-13 (Cont.)

(RMN-16)

DATE FROM TO	TIME OF DAY	DEPTH FEET	09503 RA-226 DISOLVED PC/L	09504 RA-226-D ERROR PC/L	22703 U-NAT DISOLVED UG/L
70/01/01			0.050	0.010	3.600
70/03/31		COMP			
70/04/16			0.040	0.010	2.900
70/08/03			0.010	0.010	4.600
70/10/21			0.050	0.010	1.300

490003
37 09 00.0 109 52 45.0
SAN JUAN RIVER DWS MEXICAN HAT
49 UTAH
COLORADO RIVER BASIN
MIDDLE COLORADO-SAN JUAN SUB BASIN
1118C030 2111204
2 0000 FEET DEPTH

STATION DESCRIPTION

(RMN-17)

070044
38 13 00.0 108 33 45.0
SAN MIGUEL RIVER AT NATURITA
08 COLORADO
COLORADO RIVER BASIN
UPPER COLORADO RIVER SUB BASIN
1118C030 2111204
2 0000 FEET DEPTH

	RIVER SYSTEM	II	III	IV	V	VI	VII	VIII	IX	X	XI	XII
INDEX	1101001	011940	01090									
MILES	1027.10	0066.60	021.50	.	.	.	.	.	.	.	.	.

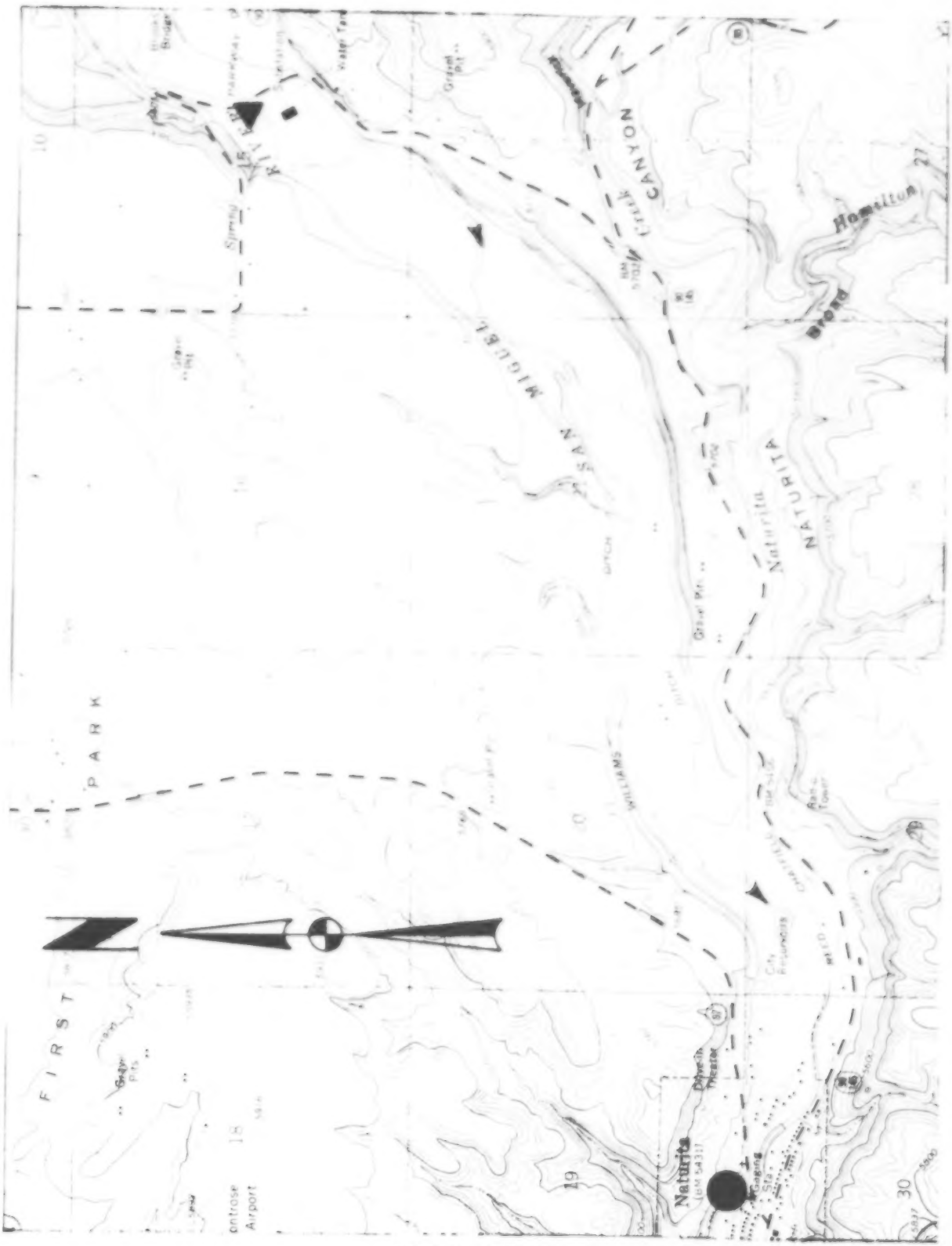
DESCRIPTION

CRAP NO. RMN-17, USGS-09-175500
NE1/4, NW1/4, SEC 30, T46N, R15W

SAMPLED AT HWY 97 BRIDGE AT NATURITA IN MONTROSE COUNTY
TYPE DATA-RAD: GRAB, 1 GAL/WEEK
TYPE FLOW MEAS-WTR STG REC AT 09175500
SAMPLING STARTED 10/28/61 AND IS ONGOING
REMARKS: THIS STATION PROVIDES BACKGROUND RADIOACTIVITY DATA FOR THE SAN MIGUEL RIVER UPSTREAM OF THE URANIUM MILLS AT NATURITA AND URAVAN. PRIOR TO 5/1/65 THIS STATION WAS 3.8 MILES UPSTREAM OF PRESENT LOCATION AND WAS SAMPLED AUTOMATICALLY 1 GAL/WEEK.

Number of Samples assayed for Ra-226 through period of record (1961-1972): 175
Mean Ra-226 concentration for period of record and 2σ deviation : 0.06 ± 0.07

Number of Samples assayed for U(total) through period of record (1962-1972): 147
Mean U(total) concentration for period of record and 2σ deviation : 2.37 ± 3.07



STATION LOCATION

(RMN-17)

TABLE A-14

(RMN-17)

070044
38 13 00.0 108 33 45.0
SAN MIGUEL RIVER AT NATURITA
08 COLORADO
COLORADO RIVER BASIN
UPPER COLORADO RIVER SUB BASIN
1118C030 211204
2 0000 FEET DEPTH

DATE FROM TO	TIME OF DAY	DEPTH FEET	09503 RA-226 DISOLVED PC/L	09504 RA-226-D ERROR PC/L	22703 U-NAT DISOLVED UG/L
61/10/28			0.000		
61/11/04		COMP			
61/11/04			0.040		
61/11/11		COMP			
61/11/11			0.050		
61/11/17		COMP			
61/11/17			0.020		
61/11/25		COMP			
61/11/25			0.020		
61/12/02		COMP			
61/12/02			0.040		
61/12/09		COMP			
61/12/07			0.010		
61/12/17		COMP			
61/12/17			0.030		
61/12/24		COMP			
61/12/24			0.010		
61/12/31		COMP			
61/12/31			0.000		
62/01/05		COMP			
62/01/05			0.030		
62/01/13		COMP			
62/01/13			0.010		
62/01/21		COMP			
62/01/21			0.040		
62/01/28		COMP			
62/01/28			0.040		
62/02/03		COMP			
62/02/03			0.030		
62/02/10		COMP			
62/02/10			0.040		
62/02/18		COMP			
62/02/18			0.060		
62/02/25		COMP			
62/02/25			0.060		
62/03/02		COMP			
62/03/02			0.040		
62/03/11		COMP			
62/03/11			0.050		
62/03/18		COMP			
62/03/18			0.040		
62/03/24		COMP			
62/03/24			0.010		
62/04/01		COMP			
62/04/01			0.060		
62/04/29		COMP			
62/04/30			0.040		
62/06/03		COMP			
62/06/03			0.050		
62/07/01		COMP			
62/07/01			0.020		
62/07/28		COMP			
62/07/28			0.090		
62/09/03		COMP			
62/09/03			0.060		
62/09/29		COMP			
62/09/29			0.050		1.200
62/11/04		COMP			
62/11/04			0.010		1.000
62/12/02		COMP			
62/12/02			0.040		0.900
62/12/30		COMP			
62/12/30			0.010		1.100
63/02/03		COMP			
63/02/03			0.010		1.300
63/03/03		COMP			
63/03/03			0.060		2.100
63/03/30		COMP			
63/03/30			0.050		0.100
63/04/27		COMP			
63/04/27			0.050		0.000
63/06/02		COMP			
63/06/02			0.050		0.500
63/06/30		COMP			
63/06/30			0.080		2.300
63/08/04		COMP			
63/08/04			0.060		0.000
63/08/31		COMP			
63/08/31			0.040		1.600
63/09/29		COMP			

TABLE A-14 (Cont.)

(RMN-17)

DATE FROM TO	TIME OF DAY	DEPTH FEET	09503 RA-226 DISOLVED PC/L	09504 RA-226-D ERROR PC/L	22703 U-NAT DISOLVED UG/L
63/09/29			0.040		3.900
63/11/03		COMP			
63/11/03			0.030		0.600
63/11/30		COMP			
63/11/30			0.030		2.000
63/12/29		COMP			
63/12/29			0.040		1.200
64/02/02		COMP			
64/02/02			0.040		1.000
64/02/28		COMP			
64/02/29			0.040		0.100
64/03/29		COMP			
64/03/29			0.190		3.200
64/05/03		COMP			
64/05/03			0.100		0.900
64/05/30		COMP			
64/05/30			0.100		0.000
64/06/28		COMP			
64/06/28			0.010		1.000
64/08/01		COMP			
64/08/01			0.080		1.200
64/08/29		COMP			
64/08/29			0.060		2.700
64/10/03		COMP			
64/10/03			0.030		2.300
64/11/01		COMP			
64/11/01			0.050		2.400
64/11/29		COMP			
64/11/29			0.040		2.200
65/01/03		COMP			
65/01/03			0.140		1.700
65/01/30		COMP			
65/01/31			0.040		1.400
65/02/28		COMP			
65/02/28			0.040		1.400
65/04/04		COMP			
65/04/04			0.040		1.000
65/05/01		COMP			
65/05/01			0.040		1.200
65/05/31		COMP			

070044
38 13 00.0 108 33 45.0
SAN MIGUEL RIVER AT NATURITA
08 COLORADO
COLORADO RIVER BASIN
UPPER COLORADO RIVER SUB BASIN
1118C030 2111204
2 0000 FEET DEPTH

DATE FROM TO	TIME OF DAY	DEPTH FEET	09503 RA-226 DISOLVED PC/L	09504 RA-226-D ERROR PC/L	22703 U-NAT DISOLVED UG/L
65/05/31			0.080		1.800
65/07/05		COMP			
65/07/05			0.040		1.700
65/08/01		COMP			
65/08/09			0.050		1.500
65/08/31		COMP			
65/08/31			0.030		3.300
65/10/04		COMP			
65/10/11			0.030		5.000
65/11/02		COMP			
65/11/08			0.040		2.700
65/11/29		COMP			
65/12/06			0.040		2.900
66/01/03		COMP			
66/01/10			0.040		3.000
66/01/31		COMP			
66/02/07			0.010		3.500
66/02/28		COMP			
66/03/07			0.040		1.000
66/03/28		COMP			
66/04/04			0.050		1.400
66/04/25		COMP			
66/05/02			0.040		0.400
66/05/23		COMP			
66/05/30			0.060		1.000
66/06/27		COMP			
66/07/05			0.050		2.700
66/07/23		COMP			
66/07/31			0.060		5.100
66/08/29		COMP			
66/09/05			0.080		6.500
66/09/26		COMP			
66/10/03			0.060		1.700
66/10/24		COMP			
66/10/31			0.040		2.900
66/11/28		COMP			
66/12/05			0.030		2.400
66/12/26		COMP			
67/01/02			0.040		2.700
67/01/23		COMP			

TABLE A-14 (Cont.)

(RMN-17)

070044
38 13 00.0 108 33 45.0
SAN MIGUEL RIVER AT NATURITA
08 COLORADO
COLORADO RIVER BASIN
UPPER COLORADO RIVER SUB BASIN
1118C030 2111204
2 0000 FEET DEPTH

DATE FROM TO	TIME OF DAY	DEPTH FEET	09503 RA-226 DISOLVED PC/L	09504 RA-226-D ERROR PC/L	22703 U-NAT DISOLVED UG/L
67/01/30			0.060		5.000
67/02/20		COMP			
67/02/27			0.050		2.400
67/03/27		COMP			
67/04/02			0.040		3.000
67/04/23		COMP			
67/04/30			0.030		1.500
67/05/28		COMP			
67/06/05			0.020		1.700
67/06/26		COMP			
67/07/02			0.040		2.500
67/07/24		COMP			
67/07/31			0.060		2.000
67/08/28		COMP			
67/09/04			0.050		4.100
67/09/25		COMP			
67/10/02			0.040		3.100
67/10/23		COMP			
67/10/30			0.030		3.800
67/11/26		COMP			
67/12/03			0.040		5.100
67/12/24		COMP			
67/12/31			0.040		2.800
68/01/28		COMP			
68/02/04			0.020		3.300
68/02/25		COMP			
68/03/03			0.030		3.300
68/03/24		COMP			
68/03/31			0.050		1.600
68/04/21		COMP			
68/04/28			0.040		1.600
68/05/26		COMP			
68/06/02			0.020	0.000	0.800
68/06/23		COMP			
68/06/30			0.040	0.010	0.700
68/07/28		COMP			
68/08/[illegible]	10 00				
CP(T)-0[illegible]			0.030	0.010	0.600
68/08/25	10 00				
68/09/01			0.060	0.010	6.900
68/09/22		COMP			
68/09/29			0.040	0.010	8.200
68/10/27		COMP			
68/11/03			0.010	0.000	4.400
68/11/24		COMP			
68/12/01			0.040		4.300
68/12/22		COMP			
68/12/29			0.020	0.000	6.000
69/01/26		COMP			
69/02/03			0.020	0.000	4.600
69/02/23		COMP			
69/03/02			0.050	0.010	3.300
69/03/23		COMP			
69/03/30			0.040	0.010	1.600
69/04/27		COMP			
69/05/11			0.030	0.010	2.200
69/05/25		COMP			
69/06/01			0.030	0.010	1.000
69/06/22		COMP			
69/06/29			0.040	0.010	2.200
69/08/28			0.050	0.010	3.600
69/09/04			0.080	0.010	5.000
69/09/25		COMP			
69/10/02			0.040	0.010	3.300
69/10/30		COMP			
69/11/06			0.040	0.010	3.000
69/11/26		COMP			
69/12/04			0.040	0.010	3.200
70/01/02		COMP			
70/01/09			0.030	0.010	5.600
70/01/29		COMP			
70/02/05			0.020	0.010	3.900
70/02/26		COMP			
70/03/05			0.040	0.010	4.500
70/03/26		COMP			
70/04/02			0.050	0.010	2.600
70/05/01		COMP			
70/05/08			0.040	0.010	2.400
70/05/28		COMP			
70/06/04			0.040	0.010	1.400
70/06/25		COMP			

TABLE A-14 (Cont.)

(RMN-17)

070044
38 13 00.0 108 33 45.0
SAN MIGUEL RIVER AT NATURITA
08 COLORADO
COLORADO RIVER BASIN
UPPER COLORADO RIVER SUB BASIN
1118C030 2111204
2 0000 FEET DEPTH

DATE FROM TO	TIME OF DAY	DEPTH FEET	09503 RA-226 DISOLVED PC/L	09504 RA-226-D ERROR PC/L	22703 U-NAT DISOLVED UG/L
70/07/02			0.030	0.010	3.000
70/07/24		COMP			
70/07/30			0.040	0.010	0.900
70/08/27		COMP			
70/09/03			0.050	0.010	0.700
70/10/01		COMP			
70/10/07			0.050	0.010	2.600
70/10/29		COMP			
70/11/05			0.010	0.030	2.300
70/11/25		COMP			
70/12/03			0.040	0.010	2.100
70/12/31		COMP			
71/01/07			0.040	0.010	4.500
71/01/28		COMP			
71/02/03			0.030	0.010	2.500
71/02/25		COMP			
71/03/04			0.040	0.010	2.000
71/04/01		COMP			
71/04/18			0.040	0.010	4.200
71/04/28		COMP			
71/05/06			0.040	0.010	1.000
71/05/27		COMP			
71/06/03			0.030	0.010	0.400
71/07/01		COMP			
71/07/08			0.008		0.900
71/07/29		COMP			
71/08/05			0.100K		1.300
71/08/26		COMP			
71/09/02			0.100K		3.200
71/09/30		COMP			
71/10/07			0.100K		1.900
71/10/14			0.100K		2.200
71/10/21			0.100K		1.300
71/10/28			0.200		1.600
71/11/04			0.200		2.000
71/11/10			0.100K		1.800
71/11/19			0.100K		3.500
71/11/24			0.100K		2.500
71/12/02			0.100K		2.600
71/12/09			0.100K		2.500
71/12/16			0.100		3.800
71/12/22			0.100		3.500
71/12/29			0.100K		5.200
72/01/06			0.100K		2.200
72/01/13			0.100K		2.200
72/01/21			0.100K		2.600
72/01/27			0.100K		2.600
72/02/03			0.100K		2.900
72/02/11			0.100K		1.800
72/02/17			0.100K		1.800
72/02/24			0.100K		3.600
72/03/02			0.100K		8.200
72/03/09			0.100K		2.400
72/03/16			0.100K		1.800
72/03/23			0.100K		1.300
72/03/31			0.100K		1.300
72/04/06			0.100K		1.400
72/04/13			0.100K		1.500
72/04/21			0.100K		1.800
72/04/26			0.100K		1.300
72/05/04			0.100		1.300
72/05/11			0.100		2.000
72/05/16			0.100		3.100
72/05/25			0.100		1.000
72/06/01			0.100K		0.600
72/06/08			0.100K		1.200
72/06/15			0.100K		0.700
72/06/22			0.200		1.000
72/06/29			0.100K		0.900

STATION DESCRIPTION

(RMN-18)

070045
38 22 00.0 108 44 00.0
SAN MIGUEL RIVER AT URAVAN
08 COLORADO
COLORADO RIVER BASIN
UPPER COLORADO SUB BASIN
1115C030 2111204
2 0000 FEET DEPTH

	RIVER SYSTEM	II	III	IV	V	VI	VII	VIII	IX	X	XI	XII
INDEX	1101001	011940	01090									
MILES	1027.10	0066.60	006.70	.	.	.	.	.	.	.	.	.

DESCRIPTION

CRHP NO. RMN-18. BWS-64
NE1/4. SW1/4. SEC 34. T48N. R17W
TYPE FLOW MEAS-WIRE WEIGHT INSTANT AT STATE 141 BRIDGE UPSTREAM
SAMPLED AT COUNTY HWY BRIDGE UPSTREAM OF OLD MILL AT URAVAN IN MONTROSE COUNTY. UPSTREAM OF DIVERSION TO URAVAN MILL.
TYPE DATA-RAD. AUTO. 1 GAL/WEEK
SAMPLING STARTED AT OLD LOCATION (SEE REMARKS) 10/27/61 AND ENDED 11/10/71. SAMPLING STARTED AT NEW LOCATION 11/19/71 AND IS ONGOING
REMARKS: OLD LOCATION 1MI. UPSTREAM URAVAN AND DOWNSTREAM OF HWY 141 AT BALL PARK. INCREASED LEVELS OF RADIOACTIVITY FROM RESIDUAL AND ERODED TAILINGS MATERIALS FROM VAN CORP OF AMER OLD MILL 11MI UPS AT NATURITA

Number of Samples assayed for Ra-226 through period of record (1961-1972): 211
Mean Ra-226 concentration for period of record and 2σ deviation : 0.17 ± 0.28

Number of Samples assayed for U(total) through period of record (1962-1972): 179
Mean U(total) concentration for period of record and 2σ deviation : 4.90 ± 11.00

STATION LOCATIONS
(RMN-18;RMN-20)

TABLE A-15

(RMN-18)

070045
38 22 00.0 108 44 00.0
SAN MIGUEL RIVER AT URAVAN
08 COLORADO
COLORADO RIVER BASIN
UPPER COLORADO SUB BASIN
1118C030 2111204
2 0000 FEET DEPTH

DATE FROM TO	TIME OF DAY	DEPTH FEET	09503 RA-226 DISOLVED PC/L	09504 RA-226-D ERROR PC/L	22703 U-NAT DISOLVED UG/L
61/10/27			0.160		
61/11/04		COMP			
61/11/04			0.120		
61/11/11		COMP			
61/11/11			0.090		
61/11/17		COMP			
61/11/17			0.110		
61/11/25		COMP			
61/11/25			0.110		
61/12/02		COMP			
61/12/02			0.150		
61/12/09		COMP			
61/12/09			0.140		
61/12/17		COMP			
61/12/17			0.180		
61/12/23		COMP			
61/12/23			0.200		
61/12/30		COMP			
61/12/30			0.150		
62/01/05		COMP			
62/01/05			0.270		
62/01/13		COMP			
62/01/13			0.250		
62/01/21		COMP			
62/01/21			0.270		
62/01/28		COMP			
62/01/28			0.220		
62/02/03		COMP			
62/02/03			0.250		
62/02/10		COMP			
62/02/10			0.170		
62/02/18		COMP			
62/02/18			0.240		
62/02/25		COMP			
62/02/25			0.180		
62/03/02		COMP			
62/03/02			0.290		
62/03/11		COMP			
62/03/11			0.240		
62/03/18		COMP			
62/03/13			0.180		
62/03/24		COMP			
62/03/14			0.160		
62/04/01		COMP			
62/03/25			0.230		
62/04/01		COMP			
62/04/01			0.230		
62/04/28		COMP			
62/05/07			0.280		
62/05/13		COMP			
62/06/03			0.380		
62/07/01		COMP			
62/07/01			0.240		
62/07/28		COMP			
62/07/28			0.360		
62/09/03		COMP			
62/09/03			0.490		
62/09/09		COMP			
62/09/09			0.510		
62/09/16		COMP			
62/09/16			0.260		
62/09/23		COMP			
62/09/23			0.130		
62/09/29		COMP			
62/09/29			0.210		5.600
62/10/07		COMP			
62/10/07			0.160		5.500
62/10/13		COMP			
62/10/13			0.080		5.800
62/10/19		COMP			
62/10/19			0.060		3.000
62/10/27		COMP			
62/10/27			0.110		4.700
62/11/04		COMP			
62/11/04			0.110		6.100
62/11/12		COMP			
62/11/12			0.340		6.700
62/11/19		COMP			
62/11/19			0.050		5.900
62/11/25		COMP			

TABLE A-15 (Cont.)

(RMN-18)

DATE FROM TO	TIME OF DAY	DEPTH FEET	09503 RA-226 DISOLVED PC/L	09504 RA-226-D ERROR PC/L	22703 U-NAT DISOLVED UG/L
62/11/25			0.130		9.100
62/12/02		COMP			
62/12/02			0.030		5.500
62/12/09		COMP			
62/12/09			0.100		6.300
62/12/16		COMP			
62/12/16			0.060		6.800
62/12/22		COMP			
62/12/22			0.150		9.400
62/12/30		COMP			
62/12/30			0.350		17.000
63/01/06		COMP			
63/01/06			0.400		24.000
63/01/13		COMP			
63/01/13			0.880		63.000
63/01/20		COMP			
63/01/20			1.240		19.000
63/01/27		COMP			
63/01/27			0.590		17.000
63/02/03		COMP			
63/02/03			0.330		7.700
63/02/10		COMP			
63/02/10			0.480		12.000
63/02/17		COMP			
63/02/17			0.090		9.400
63/02/24		COMP			
63/02/24			0.300		8.700
63/03/03		COMP			
63/03/03			0.310		16.000
63/03/09		COMP			
63/03/09			0.780		12.000
63/03/18		COMP			
63/03/18			0.210		4.800
63/03/23		COMP			
63/03/23			0.230		2.700
63/03/30		COMP			
63/03/30			0.400		1.200
63/04/07		COMP			
63/04/07			0.190		1.600
63/04/13		COMP			

070045
38 22 00.0 108 44 00.0
SAN MIGUEL RIVER AT URAVAN
08 COLORADO
COLORADO RIVER BASIN
UPPER COLORADO SUB BASIN
1118C030 2111204
2 0000 FEET DEPTH

DATE FROM TO	TIME OF DAY	DEPTH FEET	09503 RA-226 DISOLVED PC/L	09504 RA-226-D ERROR PC/L	22703 U-NAT DISOLVED UG/L
63/04/13			0.210		4.000
63/04/21		COMP			
63/04/21			0.200		5.900
63/04/27		COMP			
63/04/27			0.280		2.000
63/05/05		COMP			
63/05/05			0.330		2.600
63/05/11		COMP			
63/05/11			0.340		0.800
63/05/19		COMP			
63/05/19			0.260		2.500
63/05/26		COMP			
63/05/26			0.250		1.900
63/06/02		COMP			
63/06/02			0.280		3.200
63/06/09		COMP			
63/06/09			0.240		0.900
63/06/16		COMP			
63/06/16			0.280		1.600
63/06/23		COMP			
63/06/23			0.360		2.700
63/06/30		COMP			
63/06/30			0.110		7.700
63/08/04		COMP			
63/08/04			0.160		3.800
63/08/31		COMP			
63/08/31			0.140		3.100
63/09/29		COMP			
63/09/29			0.190		6.000
63/11/03		COMP			
63/11/03			0.100		1.900
63/11/30		COMP			
63/11/30			0.130		5.700
63/12/29		COMP			
63/12/29			0.110		3.200
64/02/02		COMP			
64/02/02			0.090		3.900
64/02/28		COMP			
64/02/29			0.110		2.500
64/03/29		COMP			

TABLE A-15 (Cont.)

(RMN-18)

070045
38 22 00.0 108 44 00.0
SAN MIGUEL RIVER AT URAVAN
08 COLORADO
COLORADO RIVER BASIN
UPPER COLORADO SUB BASIN
1118C030 2111204
2 0000 FEET DEPTH

DATE FROM TO	TIME OF DAY	DEPTH FEET	09503 RA-226 DISOLVED PC/L	09504 RA-226-D ERROR PC/L	22703 U-NAT DISOLVED UG/L
64/03/29			0.190		3.200
64/05/03		COMP			
64/05/03			0.200		1.800
64/05/30		COMP			
64/05/30			0.180		0.900
64/06/28		COMP			
64/06/28			0.150		3.700
64/08/01		COMP			
64/08/01			0.080		1.200
64/08/29		COMP			
64/08/29			0.150		6.300
64/10/03		COMP			
64/10/03			0.110		3.500
64/11/01		COMP			
64/11/01			0.100		5.000
64/11/29		COMP			
64/11/29			0.090		5.000
65/01/03		COMP			
65/01/03			0.130		4.900
65/01/31		COMP			
65/01/31			0.100		4.900
65/02/28		COMP			
65/02/28			0.130		5.000
65/04/04		COMP			
65/04/05			0.400		2.600
65/05/01		COMP			
65/05/01			0.160		1.300
65/05/31		COMP			
65/05/31			0.090		2.000
65/07/05		COMP			
65/07/05			0.080		2.800
65/08/01		COMP			
65/08/01			0.150		3.600
65/08/31		COMP			
65/08/31			0.100		5.000
65/10/04		COMP			
65/10/04			0.080		5.600
65/11/02		COMP			
65/11/02			0.090		4.400
65/11/29		COMP			
65/11/29			0.340		8.300
66/01/03		COMP			
66/01/03			0.140		5.100
66/01/31		COMP			
66/01/31			0.220		6.700
66/02/28		COMP			
66/02/28			0.100		2.100
66/04/04		COMP			
66/04/04			0.090		1.700
66/05/02		COMP			
66/05/02			0.140		1.000
66/05/30		COMP			
66/05/30			0.100		2.200
66/07/05		COMP			
66/07/05			0.180		3.600
66/07/31		COMP			
66/07/31			0.200		6.000
66/09/05		COMP			
66/09/05			0.150		5.700
66/10/03		COMP			
66/10/03			0.100		3.700
66/10/31		COMP			
66/10/31			0.080		2.900
66/12/05		COMP			
66/12/05			0.100		5.900
67/01/02		COMP			
67/01/02			0.090		4.700
67/01/30		COMP			
67/01/30			0.090		5.000
67/02/27		COMP			
67/02/27			0.150		3.700
67/03/27		COMP			
67/03/27			0.090		3.500
67/04/23		COMP			
67/04/23			0.170		2.800
67/05/28		COMP			
67/05/28			0.110		2.700
67/07/03		COMP			
67/07/03			0.100		2.700
67/07/31		COMP			

TABLE A-15 (Cont.)

(RMN-18)

070045
38 22 00.0 108 44 00.0
SAN MIGUEL RIVER AT URAVAN
08 COLORADO
COLORADO RIVER BASIN
UPPER COLORADO SUB BASIN
1118C030 2111204
2 0000 FEET DEPTH

DATE FROM TO	TIME OF DAY	DEPTH FEET	09503 RA-226 DISOLVED PC/L	09504 RA-226-D ERROR PC/L	22703 U-NAT DISOLVED UG/L
67/07/31			0.250		4.500
67/09/04		COMP			
67/09/04			0.130		5.100
67/10/02		COMP			
67/09/30			0.110		3.700
67/10/30		COMP			
67/10/30			0.080		5.000
67/12/03		COMP			
67/12/03			0.060		5.200
67/12/31		COMP			
67/12/31			0.090		5.200
68/02/04		COMP			
68/02/04			0.090		5.000
68/03/03		COMP			
68/03/03			0.110		4.400
68/03/31		COMP			
68/03/31			0.160		3.400
68/04/28		COMP			
68/04/28			0.090		1.400
68/06/02		COMP			
68/06/02			0.110	0.010	0.900
68/06/30		COMP			
68/06/30	10 00				
CP(T)-06			0.110	0.020	1.500
68/08/04	10 00				
68/08/04			0.100	0.010	1.500
68/09/01		COMP			
68/09/01			0.130	0.020	7.500
68/09/29		COMP			
68/09/30			0.090	0.010	8.400
68/11/03		COMP			
68/11/03			0.120	0.020	7.100
68/12/01		COMP			
68/12/01			0.060	0.010	5.700
68/12/29		COMP			
68/12/29			0.060	0.010	7.200
69/01/31		COMP			
69/02/01			0.100	0.010	7.500
69/02/23		COMP			
69/03/02			0.080	0.010	7.000
69/03/30		COMP			
69/03/18			0.130	0.020	17.000
69/03/19			0.060	0.010	6.100
69/03/20			0.060	0.010	6.500
69/03/30			0.100	0.010	3.000
69/05/04		COMP			
69/05/11			0.070	0.010	2.200
69/05/25		COMP			
69/06/01			0.050	0.010	2.900
69/06/29		COMP			
69/07/16			0.050	0.010	1.600
69/08/28			0.100	0.010	5.100
69/09/04			0.090	0.010	5.000
69/09/25		COMP			
69/10/02			0.060	0.010	3.700
69/10/30		COMP			
69/11/06			0.040	0.010	3.900
69/11/26		COMP			
69/12/04			0.060	0.010	4.200
70/01/02		COMP			
70/01/09			0.060	0.010	6.300
70/01/29		COMP			
70/02/05			0.100	0.020	5.500
70/02/26		COMP			
70/03/05			0.050	0.010	5.200
70/03/26		COMP			
70/04/02			0.080	0.010	3.700
70/05/01		COMP			
70/05/08			0.090	0.010	2.200
70/05/28		COMP			
70/06/04			0.090	0.020	1.100
70/06/25		COMP			
70/07/02			0.070	0.010	3.500
70/07/24		COMP			
70/07/30			0.090	0.020	1.400
70/08/27		COMP			
70/09/03			0.100	0.020	1.700
70/10/01		COMP			
70/10/07			0.060	0.010	3.200
70/10/29		COMP			
70/11/05			0.180	0.020	4.600
70/11/25		COMP			

TABLE A-15 (Cont.)

(RMN-18)

070045
38 22 00.0 108 44 00.0
SAN MIGUEL RIVER AT URAVAN
08 COLORADO
COLORADO RIVER BASIN
UPPER COLORADO SUB BASIN
1118C030 2111204
2 0000 FEET DEPTH

DATE FROM TO	TIME OF DAY	DEPTH FEET	09503 RA-226 DISOLVED PC/L	09504 RA-226-D ERROR PC/L	22703 U-NAT DISOLVED UG/L
70/11/17			0.100	0.020	2.400
70/11/19			0.070	0.010	3.000
70/12/03			0.060	0.010	3.900
70/12/31		COMP			
71/01/07			0.090	0.010	3.500
71/01/28		COMP			
71/02/03			0.070	0.010	3.300
71/02/25		COMP			
71/03/04			0.100	0.020	3.000
71/04/01		COMP			
71/04/05			0.090	0.010	2.200
71/04/28		COMP			
71/05/05			0.050	0.010	1.500
71/05/27		COMP			
71/06/03			0.050	0.010	1.300
71/07/01		COMP			
71/07/08			0.150		1.700
71/07/29		COMP			
71/08/05			0.100		3.400
71/08/26		COMP			
71/09/02			0.100K		2.200
71/09/30		COMP			
71/10/07			0.100K		3.900
71/10/14			0.100K		4.300
71/10/22			0.100K		3.100
71/10/28			0.100K		4.300
71/11/04			0.100		3.500
71/11/10			0.100		4.400
71/11/19			0.100K		3.300
71/11/24			0.100K		2.900
71/11/24			0.200		3.600
71/12/02		COMP			
71/12/02			0.100K		3.600
71/12/09		COMP			
71/12/09			0.100		4.300
71/12/16		COMP			
71/12/22			0.200		3.300
71/12/22			0.200		6.400
71/12/29		COMP			
71/12/29			0.100K		6.600
72/01/06		COMP			
72/01/06			0.100K		6.600
72/01/13		COMP			
72/01/13			0.100K		4.400
72/01/21		COMP			
72/01/21			0.100K		4.100
72/01/27		COMP			
72/01/27			0.200		5.200
72/02/03		COMP			
72/02/03			0.100		4.400
72/02/11		COMP			
72/02/11			0.100K		5.600
72/02/17		COMP			
72/02/17			0.100K		4.100
72/02/24		COMP			
72/02/24			0.300		4.800
72/03/02		COMP			
72/03/02			0.100		3.600
72/03/09		COMP			
72/03/09			0.100K		2.400
72/03/16		COMP			
72/03/16			0.100		1.800
72/03/23		COMP			
72/03/23			0.100K		1.900
72/03/31		COMP			
72/03/31			0.100K		5.600
72/04/06		COMP			
72/04/06			0.100K		3.800
72/04/13		COMP			
72/04/13			0.200		4.800
72/04/26		COMP			
72/04/26			0.400		2.700
72/05/04		COMP			
72/05/04			0.100K		1.900
72/05/11		COMP			
72/05/11			0.100		2.900
72/05/18		COMP			
72/05/18			0.200		2.700
72/05/25		COMP			
72/05/25			0.200		1.400
72/06/01		COMP			

TABLE A-15 (Cont.)

(RMN-18)

070045
38 22 00.0 108 44 00.0
SAN MIGUEL RIVER AT URAVAN
08 COLORADO
COLORADO RIVER BASIN
UPPER COLORADO SUB BASIN
1118C030 2111204
2 0000 FEET DEPTH

DATE FROM TO	TIME OF DAY	DEPTH FEET	09503 RA-226 DISOLVED PC/L	09504 RA-226-D ERROR PC/L	22703 U-NAT DISOLVED UG/L
72/06/01			0.100		1.000
72/06/08		COMP			
72/06/15			0.000		1.600
72/06/22		COMP			

STATION DESCRIPTION

(RMN-20)

070045
38 23 15.0 108 45 30.0
SAN MIGUEL RIVER DWS OF URAVAN
08 COLORADO
COLORADO RIVER BASIN
UPPER COLORADO SUB BASIN
1111HC030 2111204
2 0000 FEET .DEPTH

	RIVER SYSTEM	II	III	IV	V	VI	VII	VIII	IX	X	XI	XII
INDEX	1101001	011940	01090									
MILES	1027.10	0066.60	002.70	.	.	.	.	.	.	.	.	.

DESCRIPTION

CRHP NO. RMN-20
SE1/4, NE1/4, SEC 2, T48N, R17W
TYPE FLOW MEAS-WIRE WEIGHT INSTANT AT STATN 141 BRIDGE UPSTREAM
SAMPLED 2 MILES WEST SCHOOL BUILDINGS AND 1.8 MILES DOWNSTRE OF MILL
TYPE DATA-RAD, BACT; AUTO, 1 GAL/WEEK
SAMPLING STARTED AT OLD LOCATION (SEE REMARKS) 10/27/61 AND ENDED 11/10/71. SAMPLING STARTED AT NEW LOCATION 11/18/71 AND IS ONGOING
REMARKS: OLD LOCATION 1.7 DWS OF SCHOOL AND 1.5 DWS OF UNION CAR CORP URANIUM MILL, 0.1MI UPS MOUTH ATKINSON CREEK.
THE UNION CARBIDE MILL AT URAVAN DISCHARGES LIQUID WASTE EFFLUENT TO THE RIVER

Number of Samples assayed for Ra-226 through period of record (1961-1972): 531
Mean Ra-226 concentration for period of record and 2σ deviation : 1.22 ± 2.2

Number of Samples assayed for U(total) through period of record (1962-1972): 502
Mean U(total) concentration for period of record and 2σ deviation : 19.71 ± 21.94

SEE PREVIOUS FIGURE FOR

SAMPLING LOCATION

RMN-20

TABLE A-16

(RMN-20)

070046
38 23 15.0 108 45 30.0
SAN MIGUEL RIVER DWS OF URAVAN
08 COLORADO
COLORADO RIVER BASIN
UPPER COLORADO SUB BASIN
1118C030 2111204
2 0000 FEET DEPTH

DATE FROM TO	TIME OF DAY	DEPTH FEET	09503 RA-226 DISOLVED PC/L	09504 RA-226-D ERROR PC/L	22703 U-NAT DISOLVED UG/L
61/10/27			1.080		
61/11/04		COMP			
61/11/04			1.270		
61/11/11		COMP			
61/11/11			1.270		
61/11/17		COMP			
61/11/17			0.740		
61/11/25		COMP			
61/11/22			0.830		
61/12/02		COMP			
61/12/02			0.660		
61/12/09		COMP			
61/12/09			0.980		
61/12/17		COMP			
61/12/17			0.980		
61/12/23		COMP			
61/12/23			0.840		
61/12/30		COMP			
62/01/28			2.650		
62/02/03		COMP			
62/02/03			0.280		
62/02/10		COMP			
62/02/10			0.450		
62/02/18		COMP			
62/02/18			0.930		
62/02/25		COMP			
62/02/25			0.550		
62/03/02		COMP			
62/03/02			0.360		
62/04/01		COMP			
62/04/01			1.000		
62/04/15		COMP			
62/04/23			0.260		
62/04/28		COMP			
62/04/28			1.180		
62/06/03		COMP			
62/06/03			1.080		
62/07/01		COMP			
62/07/01			1.080		
62/07/28		COMP			
62/07/28			0.440		
62/08/06		COMP			
62/08/06			0.590		
62/08/12		COMP			
62/08/12			0.780		
62/08/19		COMP			
62/08/19			0.890		
62/08/26		COMP			
62/08/26			0.810		
62/09/03		COMP			
62/09/03			0.790		
62/09/09		COMP			
62/09/09			0.990		
62/09/16		COMP			
62/09/16			0.390		
62/09/23		COMP			
62/09/23			2.500		
62/09/29		COMP			
62/09/29			0.500		3.900
62/10/07		COMP			
62/10/07			0.200		0.670
62/10/13		COMP			
62/10/13			0.290		31.000
62/10/19		COMP			
62/10/19			0.200		8.300
62/10/27		COMP			
62/10/27			0.290		8.700
62/11/04		COMP			
62/11/04			0.600		60.000
62/11/12		COMP			
62/11/12			0.510		5.300
62/11/19		COMP			
62/11/19			1.100		13.000
62/11/25		COMP			
62/11/25			0.380		7.300
62/12/02		COMP			
62/12/02			0.340		32.000
62/12/09		COMP			
62/12/09			0.110		48.000
62/12/16		COMP			

TABLE A-16 (Cont.)

(RMN-20)

070046
38 23 15.0 108 45 30.0
SAN MIGUEL RIVER DWS OF URAVAN
08 COLORADO
COLORADO RIVER BASIN
UPPER COLORADO SUB BASIN
1118C030 2111204
2 0000 FEET DEPTH

DATE FROM TO	TIME OF DAY	DEPTH FEET	09503 RA-226 DISOLVED PC/L	09504 RA-226-D ERROR PC/L	22703 U-NAT DISOLVED UG/L
62/12/16			4.840		62.000
62/12/22		COMP			
62/12/22			0.240		84.000
62/12/30		COMP			
62/12/30			0.680		54.000
63/01/06		COMP			
63/01/06			0.740		1.500
63/01/13		COMP			
63/01/13			0.590		67.000
63/01/20		COMP			
63/01/20			0.850		2.500
63/01/27		COMP			
63/01/27			0.480		24.000
63/02/03		COMP			
63/02/03			1.130		4.400
63/02/10		COMP			
63/02/10			2.500		52.000
63/02/17		COMP			
63/02/17			1.540		2[illegible].000
63/02/24		COMP			
63/02/24			0.810		29.000
63/03/03		COMP			
63/03/03			0.940		57.000
63/03/09		COMP			
63/03/09			2.330		33.000
63/03/18		COMP			
63/03/18			0.240		6.600
63/03/23		COMP			
63/03/23			0.400		9.700
63/03/30		COMP			
63/03/30			1.250		41.000
63/04/07		COMP			
63/04/07			1.060		19.000
63/04/13		COMP			
63/04/13			1.060		1.300
63/04/21		COMP			
63/04/21			1.190		0.700
63/04/27		COMP			
63/04/27			0.810		0.200
63/05/05		COMP			
63/05/05			1.340		2.500
63/05/11		COMP			
63/05/11			2.800		29.000
63/05/19		COMP			
63/05/19			1.480		15.000
63/05/26		COMP			
63/05/26			0.850		4.900
63/06/02		COMP			
63/06/02			1.460		5.100
63/06/09		COMP			
63/06/09			0.260		0.000
63/06/16		COMP			
63/06/16			0.630		0.000
63/06/23		COMP			
63/06/23			0.440		2.000
63/06/30		COMP			
63/06/30			1.800		22.000
63/07/07		COMP			
63/07/07			0.440		8.200
63/07/12		COMP			
63/07/12			1.260		30.000
63/07/21		COMP			
63/07/21			0.280		1.600
63/07/27		COMP			
63/07/27			0.310		22.000
63/08/04		COMP			
63/08/04			0.200		17.000
63/08/11		COMP			
63/08/11			1.200		42.000
63/08/18		COMP			
63/08/18			1.290		57.000
63/08/25		COMP			
63/08/25			0.830		59.000
63/08/31		COMP			
63/08/31			1.460		27.000
63/09/08		COMP			
63/09/08			0.900		26.000
63/09/14		COMP			
63/09/14			0.380		23.000
63/09/22		COMP			

TABLE A-16 (Cont.)

(RMN-20)

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38 23 15.0 108 45 30.0
SAN MIGUEL RIVER DWS OF URAVAN
08 COLORADO
COLORADO RIVER BASIN
UPPER COLORADO SUB BASIN
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2 0000 FEET DEPTH

DATE FROM TO	TIME OF DAY	DEPTH FEET	09503 RA-226 DISOLVED PC/L	09504 RA-226-D ERROR PC/L	22703 U-NAT DISOLVED UG/L
63/09/22 63/09/29		COMP	2.160		34.000
63/09/29 63/10/06		COMP	2.150		78.000
63/10/06 63/10/13		COMP	1.360		56.000
63/10/13 63/10/20		COMP	1.950		31.000
63/10/20 63/10/27		COMP	1.880		6.400
63/10/27 63/11/03		COMP	2.080		5.000
63/11/03 63/11/10		COMP	1.750		2.500
63/11/10 63/11/17		COMP	2.210		29.000
63/11/17 63/11/24		COMP	1.590		39.000
63/11/24 63/11/30		COMP	0.940		3.700
63/11/30 63/12/08		COMP	0.580		6.600
63/12/08 63/12/15		COMP	5.580		62.000
63/12/15 63/12/22		COMP	3.240		18.000
63/12/22 63/12/24		COMP	3.380		2.400
63/12/28 64/01/05		COMP	3.280		24.000
64/01/05 64/01/12		COMP	1.760		19.000
64/01/12 64/01/19		COMP	1.310		20.000
64/01/19 64/01/26		COMP	0.940		37.000
64/01/26 64/02/02		COMP	1.550		41.000
64/02/02 64/02/09		COMP	0.800		32.000
64/02/09 64/02/16		COMP	0.810		46.000
64/02/16 64/02/22		COMP	0.800		60.000
64/02/22 64/02/28		COMP	2.010		82.000
64/02/29 64/03/08		COMP	1.740		27.000
64/03/08 64/03/14		COMP	5.060		54.000
64/03/14 64/03/22		COMP	1.370		58.000
64/03/22 64/03/29		COMP	1.530		58.000
64/03/29 64/04/05		COMP	0.640		110.000
64/04/05 64/04/12		COMP	1.870		84.000
64/04/12 64/04/19		COMP	0.250		5.900
64/04/19 64/04/26		COMP	0.350		5.300
64/04/26 64/05/03		COMP	0.340		4.100
64/05/03 64/05/10		COMP	0.210		3.700
64/05/10 64/05/17		COMP	0.390		2.900
64/05/17 64/05/24		COMP	0.060		0.300
64/05/24 64/05/31		COMP	0.200		2.100
64/05/31 64/06/06		COMP	0.240		5.200
64/06/06 64/06/13		COMP	0.340		4.600
64/06/13 64/06/21		COMP	0.300		5.500
64/06/21 64/06/28		COMP	0.240		4.500

TABLE A-16 (Cont.)

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SAN MIGUEL RIVER DWS OF URAVAN
08 COLORADO
COLORADO RIVER BASIN
UPPER COLORADO SUB BASIN
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2 0000 FEET DEPTH

DATE FROM TO	TIME OF DAY	DEPTH FEET	09503 RA-226 DISOLVED PC/L	09504 RA-226-D ERROR PC/L	22703 U-NAT DISOLVED UG/L
64/06/28			0.390		10.000
64/07/05		COMP			
64/07/05			0.320		12.000
64/07/12		COMP			
64/07/12			0.330		14.000
64/07/19		COMP			
64/07/19			0.540		16.000
64/07/27		COMP			
64/07/26			1.060		44.000
64/08/01		COMP			
64/08/01			0.300		14.000
64/08/08		COMP			
64/08/08			0.200		20.000
64/08/16		COMP			
64/08/16			0.150		14.000
64/08/23		COMP			
64/08/23			0.210		31.000
64/08/29		COMP			
64/08/29			0.580		40.000
64/09/06		COMP			
64/09/06			1.860		62.000
64/09/14		COMP			
64/09/14			0.800		37.000
64/09/21		COMP			
64/09/21			0.520		29.000
64/09/27		COMP			
64/09/27			0.680		35.000
64/10/03		COMP			
64/10/03			0.340		40.000
64/10/11		COMP			
64/10/11			0.480		26.000
64/10/18		COMP			
64/10/18			0.230		35.000
64/10/25		COMP			
64/10/25			0.200		37.000
64/11/01		COMP			
64/11/01			0.450		95.000
64/11/08		COMP			
64/11/08			0.780		34.000
64/11/15		COMP			
64/11/15			1.760		47.000
64/11/22		COMP			
64/11/22			1.370		61.000
64/11/29		COMP			
64/11/29			0.480		32.000
64/12/06		COMP			
64/12/06			0.740		36.000
64/12/15		COMP			
64/12/15			0.420		46.000
64/12/20		COMP			
64/12/20			0.390		39.000
64/12/26		COMP			
64/12/26			0.600		65.000
65/01/03		COMP			
65/01/03			0.730		44.000
65/01/10		COMP			
65/01/10			0.730		91.000
65/01/17		COMP			
65/01/17			0.740		44.000
65/01/24		COMP			
65/01/24			1.270		48.000
65/01/31		COMP			
65/01/31			0.470		27.000
65/02/07		COMP			
65/02/07			0.490		41.000
65/02/14		COMP			
65/02/14			3.140		39.000
65/02/20		COMP			
65/02/20			0.380		41.000
65/02/28		COMP			
65/02/28			0.210		36.000
65/03/07		COMP			
65/03/07			0.190		12.000
65/03/13		COMP			
65/03/14			0.190		11.000
65/03/21		COMP			
65/03/21			0.620		16.000
65/03/28		COMP			
65/03/28			0.380		28.000
65/04/04		COMP			

TABLE A-16 (Cont.)

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38 23 15.0 108 45 30.0
SAN MIGUEL RIVER DWS OF URAVAN
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COLORADO RIVER BASIN
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DATE FROM TO	TIME OF DAY	DEPTH FEET	09503 RA-226 DISOLVED PC/L	09504 RA-226-D ERROR PC/L	22703 U-NAT DISOLVED UG/L
65/04/04			1.670		19.000
65/04/11		COMP			
65/04/11			0.400		25.000
65/04/18		COMP			
65/04/18			0.310		2.400
65/04/25		COMP			
65/04/25			0.240		2.300
65/05/01		COMP			
65/05/01			0.180		3.000
65/05/09		COMP			
65/05/09			0.330		4.300
65/05/16		COMP			
65/05/16			0.110		1.700
65/05/23		COMP			
65/05/23			0.140		2.900
65/05/31		COMP			
65/05/31			0.140		4.300
65/06/07		COMP			
65/06/07			0.180		4.200
65/06/14		COMP			
65/06/14			0.100		3.800
65/06/21		COMP			
65/06/21			0.190		5.100
65/06/28		COMP			
65/06/28			0.300		2.200
65/07/05		COMP			
65/07/05			0.110		3.600
65/07/11		COMP			
65/07/19			0.200		5.300
65/07/26		COMP			
65/07/26			0.090		4.200
65/08/01		COMP			
65/08/01			0.100		4.400
65/08/09		COMP			
65/08/09			0.100		5.200
65/08/16		COMP			
65/08/16			0.130		7.800
65/08/23		COMP			
65/08/23			0.290		6.900
65/08/31		COMP			
65/08/31			0.590		14.000
65/09/06		COMP			
65/09/06			0.400		14.000
65/09/13		COMP			
65/09/13			0.920		26.000
65/09/20		COMP			
65/09/20			0.330		12.000
65/09/27		COMP			
65/09/27			0.500		12.000
65/10/04		COMP			
65/10/04			0.380		16.000
65/10/10		COMP			
65/10/11			0.190		16.000
65/10/20		COMP			
65/10/20			0.230		11.000
65/10/26		COMP			
65/10/26			0.690		23.000
65/11/02		COMP			
65/11/02			0.270		9.600
65/11/08		COMP			
65/11/08			0.150		14.000
65/11/15		COMP			
65/11/15			0.190		8.500
65/11/22		COMP			
65/11/22			1.270		15.000
65/11/29		COMP			
65/11/29			0.250		12.000
65/12/06		COMP			
65/12/06			1.080		24.000
65/12/13		COMP			
65/12/13			0.540		29.000
65/12/19		COMP			
65/12/20			0.120		5.200
65/12/27		COMP			
65/12/27			1.470		32.000
66/01/03		COMP			
66/01/03			0.470		20.000
66/01/10		COMP			
66/01/10			0.250		36.000
66/01/17		COMP			

TABLE A-16 (Cont.)

(RMN-20)

DATE FROM TO	TIME OF DAY	DEPTH FEET	09503 RA-226 DISOLVED PC/L	09504 RA-226-D ERROR PC/L	22703 U-NAT DISOLVED UG/L
66/01/17			0.530		20.000
66/01/24		COMP			
66/01/24			0.530		21.000
66/01/31		COMP			
66/01/31			0.930		24.000
66/02/07		COMP			
66/02/07			0.750		26.000
66/02/14		COMP			
66/02/14			1.180		40.000
66/02/21		COMP			
66/02/21			0.570		20.000
66/02/28		COMP			
66/02/28			0.600		18.000
66/03/07		COMP			
66/03/07			0.200		8.900
66/03/14		COMP			
66/03/14			0.220		3.800
66/03/21		COMP			
66/03/21			0.470		10.000
66/03/28		COMP			
66/03/28			0.160		3.400
66/04/04		COMP			
66/04/04			0.220		3.000
66/04/11		COMP			
66/04/11			0.320		1.100
66/04/18		COMP			
66/04/18			0.250		3.700
66/04/25		COMP			
66/04/25			0.200		3.000
66/05/02		COMP			
66/05/02			0.210		0.800
66/05/09		COMP			
66/05/09			0.310		2.200
66/05/16		COMP			
66/05/16			0.220		0.800
66/05/24		COMP			
66/05/24			0.840		1.700
66/05/30		COMP			
66/06/06			0.300		3.700
66/06/13		COMP			

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SAN MIGUEL RIVER DWS OF URAVAN
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DATE FROM TO	TIME OF DAY	DEPTH FEET	09503 RA-226 DISOLVED PC/L	09504 RA-226-D ERROR PC/L	22703 U-NAT DISOLVED UG/L
66/06/13			0.250		5.400
66/06/20		COMP			
66/06/20			0.780		8.400
66/06/27		COMP			
66/06/27			0.820		9.400
66/07/05		COMP			
66/07/05			2.350		18.000
66/07/11		COMP			
66/07/11			1.860		16.000
66/07/18		COMP			
66/07/18			0.940		24.000
66/07/25		COMP			
66/07/25			0.690		27.000
66/07/31		COMP			
66/07/31			0.310		19.000
66/08/08		COMP			
66/08/08			0.960		33.000
66/08/15		COMP			
66/08/15			0.350		46.000
66/08/22		COMP			
66/08/22			2.450		76.000
66/08/29		COMP			
66/08/29			2.550		42.000
66/09/05		COMP			
66/09/05			1.570		29.000
66/09/12		COMP			
66/09/12			2.750		51.000
66/09/19		COMP			
66/09/19			3.630		66.000
66/09/26		COMP			
66/09/26			6.370		77.000
66/10/03		COMP			
66/10/03			1.670		8.400
66/10/10		COMP			
66/10/10			1.470		6.700
66/10/17		COMP			
66/10/17			4.310		3.600
66/10/24		COMP			
66/10/24			2.060		2.700
66/10/31		COMP			

TABLE A-16 (Cont.)

(RMN-20)

070046
38 23 15.0 108 45 30.0
SAN MIGUEL RIVER DWS OF URAVAN
08 COLORADO
COLORADO RIVER BASIN
UPPER COLORADO SUB BASIN
1118C030 2111204
2 0000 FEET DEPTH

DATE FROM TO	TIME OF DAY	DEPTH FEET	09503 RA-226 DISOLVED PC/L	09504 RA-226-D ERROR PC/L	22703 U-NAT DISOLVED UG/L
66/10/31			1.180		0.700
66/11/07		COMP			
66/11/07			9.800		32.000
66/11/14		COMP			
66/11/14			3.230		27.000
66/11/21		COMP			
66/11/21			0.980		5.400
66/11/28		COMP			
66/11/28			24.500		60.000
66/12/05		COMP			
66/12/05			3.340		28.000
66/12/12		COMP			
66/12/12			2.550		57.000
66/12/19		COMP			
66/12/19			2.060		91.000
66/12/26		COMP			
66/12/26			0.980		4.000
67/01/02		COMP			
67/01/02			2.250		5.400
67/01/09		COMP			
67/01/09			1.270		3.700
67/01/19		COMP			
67/01/16			2.060		8.100
67/01/23		COMP			
67/01/23			1.470		17.000
67/01/30		COMP			
67/01/30			1.960		16.000
67/02/06		COMP			
67/02/06			2.060		6.000
67/02/13		COMP			
67/02/13			4.120		3.000
67/02/20		COMP			
67/02/20			4.120		8.400
67/02/27		COMP			
67/02/27			0.670		17.000
67/03/06		COMP			
67/03/06			1.180		4.000
67/03/13		COMP			
67/03/13			1.270		21.000
67/03/20		COMP			
67/03/20			1.080		17.000
67/03/27		COMP			
67/03/27			1.180		4.800
67/04/03		COMP			
67/04/02			0.490		10.000
67/04/09		COMP			
67/04/09			1.370		4.000
67/04/16		COMP			
67/04/16			0.540		7.200
67/04/23		COMP			
67/04/23			1.270		1.600
67/04/30		COMP			
67/04/30			1.470		7.400
67/05/06		COMP			
67/05/06			0.850		2.000
67/05/13		COMP			
67/05/14			0.530		1.000
67/05/21		COMP			
67/05/21			1.180		9.200
67/05/28		COMP			
67/05/28			0.930		6.800
67/06/05		COMP			
67/06/05			0.310		12.000
67/06/12		COMP			
67/06/12			0.570		11.000
67/06/19		COMP			
67/06/19			6.470		26.000
67/06/26		COMP			
67/06/26			1.570		6.500
67/07/03		COMP			
67/07/03			0.570		3.900
67/07/10		COMP			
67/07/10			0.240		11.000
67/07/17		COMP			
67/07/17			0.520		16.000
67/07/24		COMP			
67/07/24			0.330		15.000
67/07/31		COMP			
67/07/31			0.400		21.000
67/08/07		COMP			

TABLE A-16 (Cont.)

(RMN-20)

DATE FROM TO	TIME OF DAY	DEPTH FEET	09503 RA-226 DISOLVED PC/L	09504 RA-226-D ERROR PC/L	22703 U-NAT DISOLVED UG/L
67/08/07			0.350		31.000
67/08/14		COMP			
67/08/14			0.400		5.300
67/08/21		COMP			
67/08/21			0.790		53.000
67/08/28		COMP			
67/08/28			0.870		4.200
67/09/04		COMP			
67/09/04			0.240		12.000
67/09/11		COMP			
67/09/11			0.580		38.000
67/09/18		COMP			
67/09/18			0.620		6.900
67/09/25		COMP			
67/09/25			0.820		12.000
67/10/02		COMP			
67/10/02			0.460		23.000
67/10/09		COMP			
67/10/07			0.520		9.800
67/10/14		COMP			
67/10/16			0.470		5.500
67/10/23		COMP			
67/10/23			1.270		8.900
67/10/30		COMP			
67/10/30			0.980		14.000
67/11/06		COMP			
67/11/06			1.760		3.500
67/11/13		COMP			
67/11/13			2.650		11.000
67/11/20		COMP			
67/11/20			4.710		16.000
67/11/26		COMP			
67/11/26			1.760		28.000
67/12/03		COMP			
67/12/03			1.570		55.000
67/12/10		COMP			
67/12/10			5.060		45.000
67/12/17		COMP			
67/12/17			5.100		37.000
67/12/24		COMP			

070046
38 23 15.0 108 45 30.0
SAN MIGUEL RIVER DWS OF URAVAN
08 COLORADO
COLORADO RIVER BASIN
UPPER COLORADO SUB BASIN
1118C030 2111204
2 0000 FEET DEPTH

DATE FROM TO	TIME OF DAY	DEPTH FEET	09503 RA-226 DISOLVED PC/L	09504 RA-226-D ERROR PC/L	22703 U-NAT DISOLVED UG/L
67/12/24			4.610		36.000
67/12/31		COMP			
67/12/31			7.060		51.000
68/01/07		COMP			
68/01/07			19.600		94.000
68/01/14		COMP			
68/01/14			3.530		9.800
68/01/21		COMP			
68/01/21			2.550		32.000
68/01/28		COMP			
68/01/28			5.000		17.000
68/02/04		COMP			
68/02/04			9.210		11.000
68/02/11		COMP			
68/02/11			6.080		11.000
68/02/18		COMP			
68/02/18			1.860		5.700
68/02/25		COMP			
68/02/25			1.670		4.600
68/03/03		COMP			
68/03/03			2.350		13.000
68/03/10		COMP			
68/03/10			12.740		12.000
68/03/17		COMP			
68/03/17			5.390		3.500
68/03/24		COMP			
68/03/24			2.450		12.000
68/03/31		COMP			
68/03/31			2.160		13.000
68/04/07		COMP			
68/04/07			3.140		16.000
68/04/14		COMP			
68/04/14			1.370		1.700
68/04/21		COMP			
68/04/21			1.860		1.600
68/04/28		COMP			
68/04/28			1.080		7.200
68/05/05		COMP			
68/05/05			0.390		0.800
68/05/12		COMP			

TABLE A-16 (Cont.)

(RMN-20)

DATE FROM TO	TIME OF DAY	DEPTH FEET	09503 RA-226 DISOLVED PC/L	09504 RA-226-D ERROR PC/L	22703 U-NAT DISOLVED UG/L
68/05/12			0.350		1.400
68/05/19		COMP			
68/05/19			0.710		2.000
68/05/26		COMP			
68/05/26			0.370		5.400
68/06/02		COMP			
68/06/02			0.630	0.050	0.800
68/06/09		COMP			
68/06/09			0.360	0.030	1.000
68/06/16		COMP			
68/06/16			0.740	0.050	1.100
68/06/23		COMP			
68/06/23			2.030	0.090	1.000
68/06/30		COMP			
68/06/30	10 00				
CP(T)-01			2.000	0.100	3.300
68/07/07	10 00				
68/07/07	10 00				
CP(T)-01			1.000	0.000	2.200
68/07/14	10 00				
68/07/14	10 00				
CP(T)-01			0.600	0.040	3.000
68/07/21	10 00				
68/07/21	10 00				
CP(T)-01			0.300	0.040	35.000
68/07/28	10 00				
68/07/28			0.130	0.020	8.700
68/08/04		COMP			
68/08/04			0.700	0.040	64.000
68/08/11		COMP			
68/08/11			0.690	0.040	36.000
68/08/18		COMP			
68/08/18			0.720	0.040	4.100
68/08/25		COMP			
68/08/25			4.300	0.200	21.000
68/09/01		COMP			
68/09/01			5.700	0.200	32.000
68/09/08		COMP			
68/09/08			2.000	0.100	32.000
68/09/15		COMP			

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38 23 15.0 108 45 30.0
SAN MIGUEL RIVER DWS OF URAVAN
08 COLORADO
COLORADO RIVER BASIN
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2 0000 FEET DEPTH

DATE FROM TO	TIME OF DAY	DEPTH FEET	09503 RA-226 DISOLVED PC/L	09504 RA-226-D ERROR PC/L	22703 U-NAT DISOLVED UG/L
68/09/15			1.600	0.100	13.000
68/09/22		COMP			
68/09/22			1.000	0.100	33.000
68/09/29		COMP			
68/09/29			0.940	0.070	26.000
68/10/06		COMP			
68/10/06			0.870	0.070	18.000
68/10/13		COMP			
68/10/13			1.200	0.100	29.000
68/10/20		COMP			
68/10/20			0.710	0.030	26.000
68/10/27		COMP			
68/10/27			2.400	0.100	48.000
68/11/03		COMP			
68/11/03			4.600	0.200	100.000
68/11/10		COMP			
68/11/10			4.400	0.200	25.000
68/11/17		COMP			
68/11/17			1.900	0.100	28.000
68/11/24		COMP			
68/11/24			2.000	0.100	40.000
68/12/01		COMP			
68/12/01			26.000	1.000	260.000
68/12/08		COMP			
68/12/08			2.800	0.100	24.000
68/12/15		COMP			
68/12/15			2.800	0.100	29.000
68/12/22		COMP			
68/12/22			6.400		32.000
68/12/29		COMP			
68/12/29			6.900	0.200	23.000
69/01/05		COMP			
69/01/05			3.500	0.200	48.000
69/01/12		COMP			
69/01/12			1.400	0.100	35.000
69/01/19		COMP			
69/01/19			1.400	0.100	31.000
69/01/26		COMP			
69/01/26			1.500	0.100	46.000
69/01/31		COMP			

TABLE A-16 (Cont.)

(RMN-20)

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38 23 15.0 108 45 30.0
SAN MIGUEL RIVER DWS OF URAVAN
08 COLORADO
COLORADO RIVER BASIN
UPPER COLORADO SUB BASIN
1118C030 2111204
2 0000 FEET DEPTH

DATE FROM TO	TIME OF DAY	DEPTH FEET	09503 RA-226 DISOLVED PC/L	09504 RA-226-D ERROR PC/L	22703 U-NAT DISOLVED UG/L
69/02/01			8.900	0.300	26.000
69/02/09		COMP			
69/02/09			8.200	0.300	25.000
69/02/16		COMP			
69/02/16			2.800	0.100	43.000
69/02/23		COMP			
69/02/23			3.800	0.100	85.000
69/03/02		COMP			
69/03/02			4.000	0.100	83.000
69/03/09		COMP			
69/03/09			0.500	0.000	17.000
69/03/16		COMP			
69/03/18			0.240	0.020	21.000
69/03/19			0.280	0.030	13.000
69/03/20			0.240	0.020	13.000
69/03/23			3.300	0.100	37.000
69/03/30		COMP			
69/03/30			0.330	0.030	3.600
69/04/06		COMP			
69/04/06			0.310	0.030	4.700
69/04/13		COMP			
69/04/13			0.140	0.020	4.000
69/04/20		COMP			
69/04/20			0.160	0.020	3.900
69/04/27		COMP			
69/04/27			1.510	0.070	11.000
69/05/04		COMP			
69/05/04			0.130	0.020	2.100
69/05/11		COMP			
69/05/11			0.120	0.010	2.200
69/05/18		COMP			
69/05/18			0.140	0.020	3.000
69/05/25		COMP			
69/06/01			0.320	0.030	5.000
69/06/08		COMP			
69/06/08			1.120	0.100	12.000
69/06/15		COMP			
69/06/15			0.190	0.020	23.000
69/06/22		COMP			
69/06/22			0.890	0.050	19.000
69/06/29		COMP			
69/07/16			0.310	0.030	3.700
69/08/20			0.830	0.050	7.800
69/08/28			0.880	0.050	18.000
69/09/04			0.470	0.040	20.000
69/09/11			0.220	0.020	10.000
69/09/18			0.470	0.040	26.000
69/09/25			3.520	0.130	67.000
69/10/02			0.820	0.050	7.600
69/10/09			0.730	0.050	7.900
69/10/16			0.870	0.050	7.900
69/10/23			0.730	0.050	7.200
69/10/30			0.860	0.050	8.300
69/11/06			0.450	0.040	7.000
69/11/13			1.300	0.100	15.000
69/11/20			1.500	0.100	16.000
69/11/26			0.830	0.050	19.000
69/12/04			4.000	0.200	16.000
69/12/11			0.330	0.030	19.000
69/12/18			0.870	0.050	20.000
69/12/26			1.000	0.100	19.000
70/01/09			0.400	0.030	23.000
70/01/15			0.620	0.040	42.000
70/01/22			0.740	0.050	19.000
70/01/29			0.250	0.030	15.000
70/02/05			0.220	0.020	12.000
70/02/12			0.370	0.030	17.000
70/02/19			0.810	0.050	14.000
70/02/26			0.710	0.050	17.000
70/03/05			0.930	0.050	30.000
70/03/12			1.000	0.060	14.000
70/03/19			0.890	0.050	16.000
70/03/26			0.790	0.050	14.000
70/04/02			0.640	0.040	18.000
70/04/09			1.450	0.070	9.400
70/04/16			1.330	0.070	34.000
70/04/24			0.580	0.040	6.400
70/05/01			0.210	0.020	3.600
70/05/08			0.910	0.050	17.000
70/05/15			0.150	0.020	1.900

TABLE A-16 (Cont.)

(RMN-20)

DATE FROM TO	TIME OF DAY	DEPTH FEET	09503 RA-226 DISOLVED PC/L	09504 RA-226-D ERROR PC/L	22703 U-NAT DISOLVED UG/L
70/05/22			0.140	0.020	2.800
70/05/28			0.140	0.020	2.600
70/06/04			0.170	0.020	2.400
70/06/11			0.550	0.040	15.000
70/06/18			0.240	0.030	2.300
70/06/25			0.190	0.020	2.000
70/07/02			0.200	0.030	4.200
70/07/09			0.490	0.050	16.000
70/07/16			0.220	0.030	6.800
70/07/24			0.290	0.040	7.700
70/07/30			0.340	0.030	6.300
70/08/06			0.210	0.020	8.500
70/08/13			0.670	0.050	9.400
70/08/20			0.170	0.020	6.700
70/08/27			0.620	0.040	7.800
70/09/03			0.200	0.020	10.000
70/09/10			0.220	0.020	7.500
70/09/17			0.350	0.030	9.400
70/09/24			0.200	0.020	5.100
70/10/01			0.180	0.020	6.100
70/10/07			0.220	0.020	13.000
70/10/14			0.160	0.020	24.000
70/10/22			0.110	0.020	9.700
70/10/29			0.130	0.020	15.000
70/11/05			0.100	0.020	14.000
70/11/13			0.110	0.020	8.700
70/11/17			0.070	0.010	9.500
70/11/20			0.140	0.020	16.000
70/11/25			0.200	0.020	21.000
70/12/03			0.100	0.020	11.000
70/12/10			0.150	0.020	12.000
70/12/17			0.220	0.020	17.000
70/12/22			0.170	0.020	23.000
70/12/31			0.350	0.030	20.000
71/01/07			0.410	0.030	13.000
71/01/14			0.830	0.050	18.000
71/01/21			1.100	0.100	19.000
71/01/28			0.200	0.020	16.000
71/02/03			0.540	0.040	3.900

070046
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SAN MIGUEL RIVER DWS OF URAVAN
08 COLORADO
COLORADO RIVER BASIN
UPPER COLORADO SUB BASIN
1118C030 2111204
2 0000 FEET DEPTH

DATE FROM TO	TIME OF DAY	DEPTH FEET	09503 RA-226 DISOLVED PC/L	09504 RA-226-D ERROR PC/L	22703 U-NAT DISOLVED UG/L
71/02/11			0.210	0.020	17.000
71/02/18			0.250	0.020	16.000
71/02/25			0.260	0.030	16.000
71/03/03			0.280	0.030	18.000
71/03/11			0.170	0.020	16.000
71/03/18			0.330	0.030	23.000
71/03/25			0.330	0.030	2.800
71/04/01			0.140	0.020	1.800
71/04/08			0.100	0.020	2.800
71/04/14			0.250	0.030	2.500
71/04/23			0.900	0.020	6.300
71/04/28			0.100	0.020	2.900
71/05/06			0.100	0.020	3.000
71/05/13			0.100	0.020	3.000
71/05/21			0.160	0.020	4.800
71/05/27			0.120	0.020	4.200
71/06/03			1.130	0.060	5.600
71/06/10			0.120	0.020	3.100
71/06/16			0.170	0.020	2.000
71/06/25			0.120	0.020	1.400
71/07/01			0.130	0.020	2.500
71/07/08			0.500		3.200
71/07/29		COMP			
71/07/15			0.220		4.100
71/07/22			0.180		2.700
71/07/29			0.280		7.200
71/08/05			0.400		32.000
71/08/13			0.400		14.000
71/08/19			0.500		14.000
71/08/26			0.300		5.000
71/09/02			0.200		11.000
71/09/09			0.100		13.000
71/09/16			0.300		22.000
71/09/23			0.600		18.000
71/09/30			2.400		12.000
71/10/07			0.500		3.500
71/10/14			0.200		4.800
71/10/21			0.200		7.500
71/10/28			0.100K		5.000

TABLE A-16 (Cont.)

(RMN-20)

070046
38 23 15.0 108 45 30.0
SAN MIGUEL RIVER DWS OF URAVAN
08 COLORADO
COLORADO RIVER BASIN
UPPER COLORADO SUB BASIN
1118C030 2111204
2 0000 FEET DEPTH

DATE FROM TO	TIME OF DAY	DEPTH FEET	09503 RA-226 DISOLVED PC/L	09504 RA-226-D ERROR PC/L	22703 U-NAT DISOLVED UG/L
71/11/04			0.200		8.500
71/11/10			0.400		12.000
71/11/18			0.200		7.500
71/11/24			0.200		14.000
71/11/24			0.700		23.000
71/12/02		COMP			
71/12/02			0.100		12.000
71/12/09		COMP			
71/12/09			0.300		21.000
71/12/16		COMP			
71/12/22			0.500		16.000
71/12/22			0.300		12.000
71/12/29		COMP			
71/12/29			0.300		13.000
72/01/06		COMP			
72/01/06			0.300		26.000
72/01/13		COMP			
72/01/13			0.200		28.000
72/01/21		COMP			
72/01/21			0.300		16.000
72/01/27		COMP			
72/01/27			0.200		6.400
72/02/03		COMP			
72/02/03			0.300		12.000
72/02/11		COMP			
72/02/11			1.000		20.000
72/02/17		COMP			
72/02/17			0.700		5.400
72/02/24		COMP			
72/02/24			0.800		8.900
72/03/02		COMP			
72/03/02			0.700		10.600
72/03/09		COMP			
72/03/09			0.400		11.700
72/03/16		COMP			
72/03/16			0.300		8.500
72/03/23		COMP			
72/03/23			0.300		10.200
72/03/31		COMP			
72/03/31			0.800		31.000
72/04/06		COMP			
72/04/06			0.600		13.000
72/04/13		COMP			
72/04/13			0.400		8.500
72/04/21		COMP			
72/04/21			0.200		12.000
72/04/26		COMP			
72/04/26			0.300		10.000
72/05/04		COMP			
72/05/04			0.300		11.000
72/05/11		COMP			
72/05/11			0.300		17.000
72/05/18		COMP			
72/05/18			0.300		6.600
72/05/25		COMP			
72/05/25			0.200		4.600
72/06/01		COMP			
72/06/01			0.200		2.900
72/06/08		COMP			
72/06/08			0.200		3.600
72/06/15		COMP			
72/06/15			0.200		5.000
72/06/22		COMP			
72/06/22			0.200		6.900
72/06/29		COMP			

STATION DESCRIPTION

(RMN-21)

070041
38 18 30.0 108 53 00.0
DOLORES RIVER NEAR BEDROCK
08 COLORADO
COLORADO RIVER BASIN
UPPER COLORADO SUB BASIN
11148C030 2111204
2 0000 FEET DEPTH

	RIVER SYSTEM	II	III	IV	V	VI	VII	VIII	IX	X	XI	XII
INDEX	1101001	011940										
MILES	1027.10	0077.55										

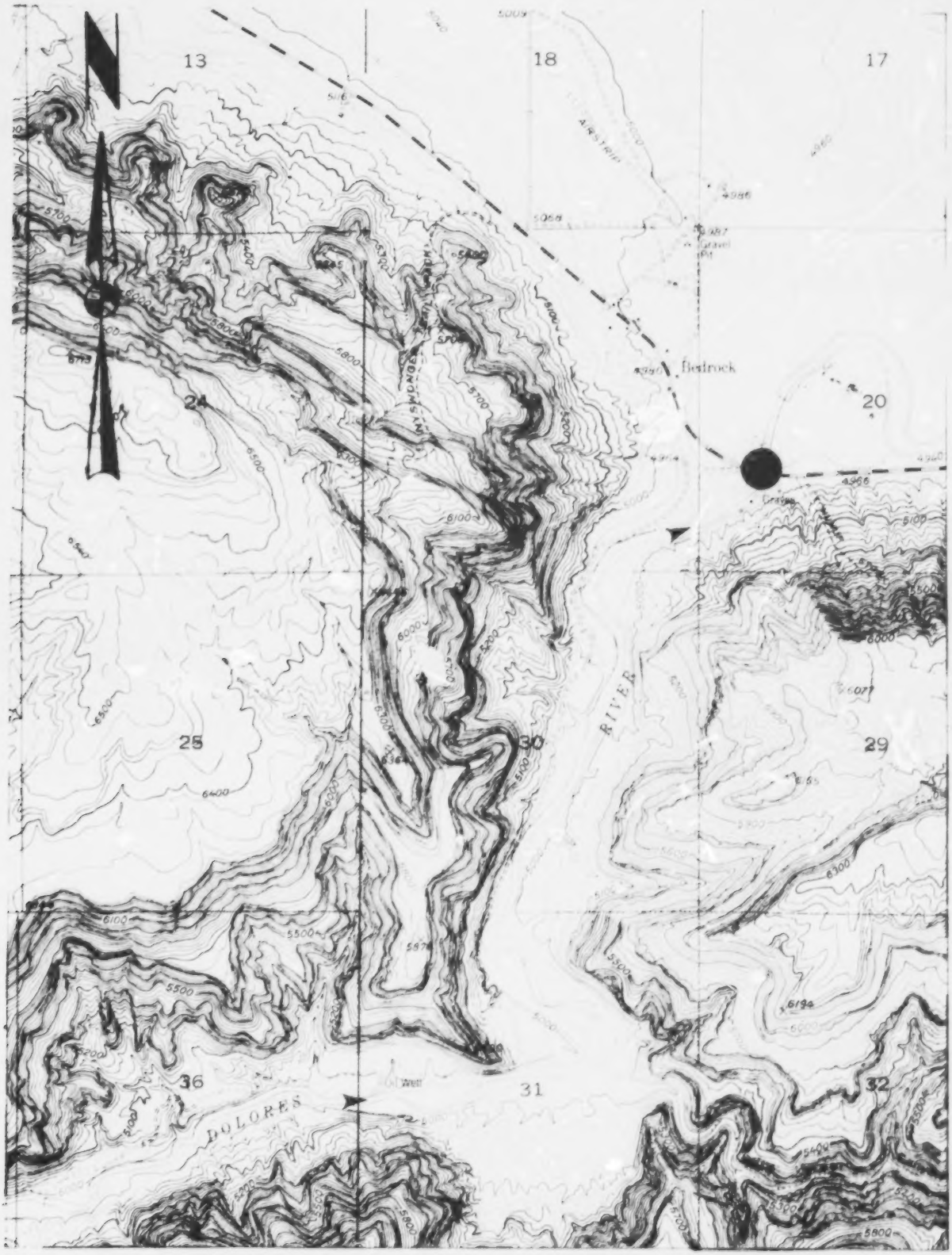
DESCRIPTION

CRHP NO. RMN-21. BWS-60. UMS-25
SW1/4. SEC 20. T47N. R18W

SAMPLED AT COLO HWY 90 BRIDGE NEAR BEDROCK. COLO. IN MONTROSE COUNTY
TYPE DATA-RAD: GRAB. 3 PINTS/WEEK
TYPE FLOW MEAS-WIRE WEIGHT INSTANT
SAMPLING STARTED 10/30/61 AND IS ONGOING
REMARKS: THE UNION CARBIDE CORPORATION URANIUM MILL 50MI. UPSTREAM AT SLICK ROCK DISCONTINUED OPERATION IN 1962. THE RIVER PICKS UP RADIOACTIVITY FROM NATURAL SOURCES BETWEEN GYPSUM VALLEY AND BEDROCK

Number of Samples assayed for Ra-226 through period of record (1961-1972): 156
Mean Ra-226 concentration for period of record and 2σ deviation : 0.48 ± 2.23

Number of Samples assayed for U(total) through period of record (1962-1972): 143
Mean U(total) concentration for period of record and 2σ deviation : 8.46 ± 13.75



STATION LOCATION

(RMN-21)

TABLE A-17

(RMN-21)

070041
38 18 30.0 108 53 00.0
DOLORES RIVER NEAR BEDROCK
08 COLORADO
COLORADO RIVER BASIN
UPPER COLORADO SUB BASIN
1118C030 2111204
2 0000 FEET DEPTH

DATE FROM TO	TIME OF DAY	DEPTH FEET	09503 RA-226 DISOLVED PC/L	09504 RA-226-D ERROR PC/L	22703 U-NAT DISOLVED UG/L
61/10/30			0.980		
61/11/04		COMP			
61/11/06			1.000		
61/11/11		COMP			
61/11/13			0.640		
61/12/02		COMP			
61/12/04			0.790		
61/12/30		COMP			
62/01/01			0.510		
62/01/27		COMP			
62/01/29			0.410		
62/03/03		COMP			
62/03/05			0.630		
62/03/31		COMP			
62/04/02			0.210		
62/04/28		COMP			
62/04/30			0.120		
62/06/02		COMP			
62/06/04			0.080		
62/06/30		COMP			
62/07/02			0.290		
62/07/28		COMP			
62/07/30			0.480		
62/09/01		COMP			
62/09/03			0.560		
62/09/29		COMP			
62/10/01			0.340		11.000
62/11/03		COMP			
62/11/05			0.510		12.000
62/12/01		COMP			
62/12/03			0.490		11.000
62/12/29		COMP			
62/12/31			0.480		8.900
63/02/02		COMP			
63/02/04			0.190		7.400
63/03/02		COMP			
63/03/03			0.590		9.800
63/03/30		COMP			
63/04/01			0.150		2.900
63/04/27		COMP			
63/04/29			0.030		0.900
63/06/01		COMP			
63/06/03			0.500		6.300
63/06/29		COMP			
63/07/01			0.480		11.000
63/08/02		COMP			
63/08/06			0.930		31.000
63/08/30		COMP			
63/09/02			0.580		28.000
63/09/28		COMP			
63/09/30			0.490		35.000
63/11/01		COMP			
63/11/04			0.410		14.000
63/11/30		COMP			
63/12/02			0.550		19.000
63/12/27		COMP			
63/12/30			0.640		16.000
64/01/31		COMP			
64/02/03			1.400		16.000
64/02/28		COMP			
64/03/02			0.520		17.000
64/03/27		COMP			
64/03/30			0.260		6.800
64/05/01		COMP			
64/05/04			0.190		2.600
64/05/29		COMP			
64/06/01			0.200		2.000
64/06/26		COMP			
64/06/29			0.580		11.000
64/07/31		COMP			
64/08/03			0.330		8.500
64/08/28		COMP			
64/08/31			0.690		21.000
64/10/02		COMP			
64/10/05			0.980		29.000
64/10/30		COMP			
64/11/02			1.080		30.000
64/11/27		COMP			
64/11/30			0.410		12.000
65/01/02		COMP			

TABLE A-17 (Cont.)

(RMN-21)

070041
38 18 30.0 108 53 00.0
DOLORES RIVER NEAR BEDROCK
08 COLORADO
COLORADO RIVER BASIN
UPPER COLORADO SUB BASIN
1118C030 2111204
2 0000 FEET DEPTH

DATE FROM TO	TIME OF DAY	DEPTH FEET	09503 RA-226 DISOLVED PC/L	09504 RA-226-D ERROR PC/L	22703 U-NAT DISOLVED UG/L
65/01/04			0.370		11.000
65/01/29		COMP			
65/02/01			0.390		11.000
65/02/26		COMP			
65/03/01			0.430		11.000
65/04/02		COMP			
65/04/05			0.140		2.600
65/04/30		COMP			
65/05/03			0.160		0.600
65/05/28		COMP			
65/05/31			0.090		1.500
65/07/02		COMP			
65/07/05			0.160		2.500
65/07/30		COMP			
65/08/02			0.250		5.300
65/08/27		COMP			
65/08/30			0.580		8.300
65/10/01		COMP			
65/10/04			0.250		5.800
65/10/29		COMP			
65/11/01			0.250		7.000
65/11/26		COMP			
65/11/29			0.210		4.200
65/12/31		COMP			
66/01/03			0.160		5.000
66/01/28		COMP			
66/01/31			0.210		4.800
66/02/25		COMP			
66/02/28			0.140		1.800
66/04/01		COMP			
66/04/04			0.110		1.800
66/04/29		COMP			
66/05/02			0.080		0.100
66/05/27		COMP			
66/05/30			0.210		3.500
66/07/01		COMP			
66/07/05			0.760		12.000
66/07/29		COMP			
66/08/01			0.480		8.600
66/09/02		COMP			
66/09/05			0.540		12.000
66/09/30		COMP			
66/10/03			0.440		12.000
66/10/28		COMP			
66/10/31			0.350		13.000
66/12/02		COMP			
66/12/05			0.400		12.000
66/12/30		COMP			
67/01/02			0.530		7.000
67/01/28		COMP			
67/01/30			0.200		6.000
67/02/24		COMP			
67/02/27			0.250		6.400
67/03/31		COMP			
67/04/03			0.250		6.000
67/04/28		COMP			
67/05/01			0.160		2.700
67/05/24		COMP			
67/05/24			0.350		4.100
67/06/30		COMP			
67/07/03			0.980		12.000
67/07/28		COMP			
67/07/31			0.450		11.000
67/09/01		COMP			
67/09/04			0.610		10.000
67/09/27		COMP			
67/10/02			0.820		14.000
67/10/27		COMP			
67/10/30			0.760		15.000
67/12/01		COMP			
67/12/04			0.530		14.000
67/12/29		COMP			
68/01/01			0.320		7.400
68/02/02		COMP			
68/02/05			0.160		7.000
68/03/01		COMP			
68/03/04			0.380		8.500
68/03/29		COMP			
68/04/01			0.160		3.800
68/04/26		COMP			

TABLE A-17 (Cont.)

(RMN-21)

DATE FROM TO	TIME OF DAY	DEPTH FEET	09503 RA-226 DISOLVED PC/L	09504 RA-226-D ERROR PC/L	22703 U-NAT DISOLVED UG/L
68/04/29			0.140	0.020	1.600
68/05/31		COMP			
68/06/03			0.110	0.020	0.800
68/06/28		COMP			
68/07/01			0.230	0.020	6.200
68/08/02		COMP			
68/08/05	10 00				
CP(T)-05			0.380	0.030	3.900
68/08/30	10 00				
68/09/02			0.400	0.000	11.000
68/09/28		COMP			
68/09/30			0.540	0.030	18.000
68/11/01		COMP			
68/11/04			0.430	0.030	13.000
68/11/25		COMP			
68/12/02			0.300	0.030	12.000
68/12/27		COMP			
68/12/30			0.260	0.090	7.100
69/01/31		COMP			
69/02/03			0.220	0.020	6.800
69/02/28		COMP			
69/03/03			0.200	0.000	6.700
69/03/28		COMP			
69/03/31			0.150	0.020	3.900
69/05/02		COMP			
69/05/05			0.070	0.010	0.800
69/05/30		COMP			
69/06/02			0.080	0.010	0.700
69/06/27		COMP			
69/08/28			0.290	0.030	9.500
69/09/04			0.500	0.040	17.000
69/09/25		COMP			
69/10/02			0.790	0.050	17.000
69/10/30		COMP			
69/11/06			0.300	0.030	5.700
69/11/26		COMP			
69/12/04			0.230	0.020	4.500
70/01/02		COMP			
70/01/09			0.320	0.030	8.500
70/01/29		COMP			

070041
38 18 30.0 108 53 00.0
DOLORES RIVER NEAR BEDROCK
08 COLORADO
COLORADO RIVER BASIN
UPPER COLORADO SUB BASIN
1118C030 2111204
2 0000 FEET DEPTH

DATE FROM TO	TIME OF DAY	DEPTH FEET	09503 RA-226 DISOLVED PC/L	09504 RA-226-D ERROR PC/L	22703 U-NAT DISOLVED UG/L
70/02/05			0.350	0.030	6.600
70/02/26		COMP			
70/03/05			0.780	0.050	10.000
70/03/26		COMP			
70/04/02			0.220	0.020	5.300
70/05/01		COMP			
70/05/08			0.100	0.020	2.000
70/05/28		COMP			
70/06/04			0.120	0.020	0.800
70/06/25		COMP			
70/07/02			0.560	0.050	12.000
70/07/24		COMP			
70/07/30			0.750	0.050	8.800
70/08/27		COMP			
70/09/03			0.280	0.030	2.900
70/10/01		COMP			
70/10/06			0.350	0.030	9.900
70/10/29		COMP			
70/11/05			0.270	0.030	7.000
70/11/25		COMP			
70/12/03			0.090	0.020	6.100
70/12/31		COMP			
71/01/07			0.240	0.030	6.500
71/01/28		COMP			
71/02/03			0.160	0.020	3.200
71/02/25		COMP			
71/03/04			0.170	0.020	2.900
71/04/01		COMP			
71/04/08			0.090	0.020	2.200
71/04/28		COMP			
71/05/06			0.080	0.010	0.700
71/05/27		COMP			
71/06/03			0.080	0.010	0.800
71/07/01		COMP			
71/07/08			1.200		9.500
71/07/29		COMP			
71/08/05			1.500		15.000
71/08/26		COMP			
71/09/02			0.900		21.000
71/09/30		COMP			

TABLE A-17 (Cont.)

(RMN-21)

070041
38 18 30.0 108 53 00.0
DOLORES RIVER NEAR BEDROCK
08 COLORADO
COLORADO RIVER BASIN
UPPER COLORADO SUB BASIN
1118C030 2111204
2 0000 FEET DEPTH

DATE FROM TO	TIME OF DAY	DEPTH FEET	09503 RA-226 DISOLVED PC/L	09504 RA-226-D ERROR PC/L	22703 U-NAT DISOLVED UG/L
71/10/07			1.700		15.000
71/10/14			1.400		26.000
71/10/21			0.100K		7.500
71/10/28			13.800		16.000
71/11/04			0.600		14.000
71/11/10			0.700		14.000
71/11/18			0.500		12.000
71/11/24			0.500		26.000
71/12/09			0.200		4.100
71/12/16			0.300		4.300
71/12/22			0.300		8.500
71/12/29			0.200		4.800
72/01/06			0.200		4.600
72/01/13			0.100K		3.300
72/01/21			0.200		4.300
72/01/27			0.300		5.900
72/02/03			0.200		7.800
72/02/17			0.300		5.900
72/02/24			1.100		19.000
72/03/02			0.200		4.100
72/03/09			0.300		1.900
72/03/16			0.200		1.800
72/03/23			0.200		2.600
72/03/31			0.200		2.600
72/04/06			0.200		4.300
72/04/13			0.200		3.300
72/04/21			0.200		2.200
72/04/26			0.200		2.900
72/05/04			0.200		1.600
72/05/11			0.200		3.300
72/05/18			0.200		3.200
72/05/25			0.100		1.700
72/06/01			0.100		1.200
72/06/08			0.100		1.300
72/06/15			0.200		1.900
72/06/22			0.500		6.400

STATION DESCRIPTION

(RMN-22)

070010
38 31 45.0 106 56 30.0
TOMICHI CREEK NEAR GUNNISON
0M COLORADO
COLORADO RIVER BASIN
UPPER COLORADO RIVER SUB BASIN
1118C030 2111204
2 0000 FEET DEPTH

	RIVER SYSTEM	II	III	IV	V	VI	VII	VIII	IX	X	XI	XII
INDEX	1101001	012080	01540									
MILES	1101.80	0145.50	002.30									

DESCRIPTION

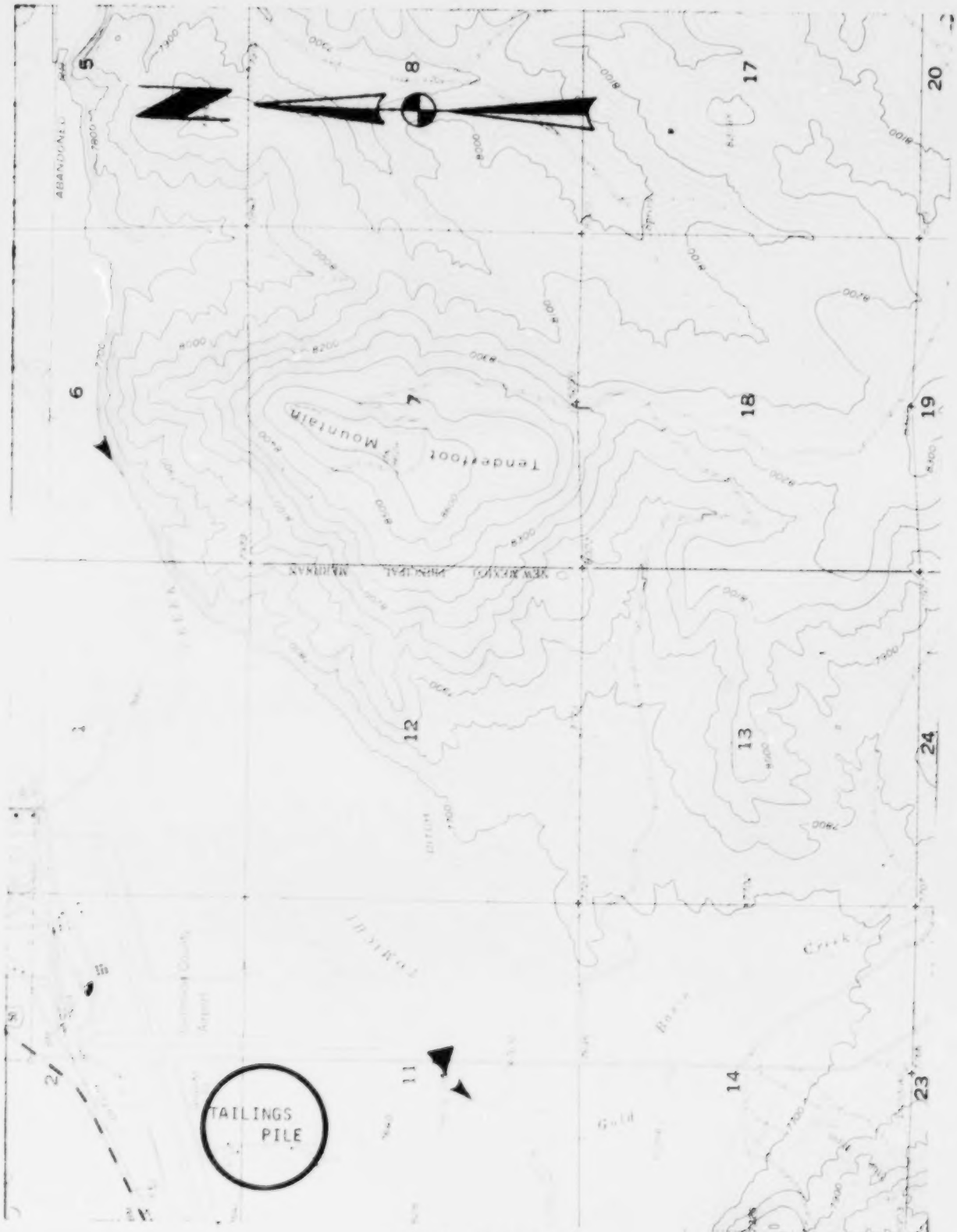
RMN NO. 22
NE1/4, SW1/4, Sec 11, T49N, R1W

SAMPLED AT COUNTY BRIDGE 1.8 MILES SOUTHWEST OF POST OFFICE IN GUNNISON AND 2 MILES UPSTREAM OF ITS MOUTH
TYPE DATA-RAD, SAL: GRAB
SAMPLING STARTED 11/12/61 AND ENDED 6/30/62
REMARKS: TYPE FLOW MEAS-WTR STG REC AT 09119000. STATION PROVIDES BACKGROUND UPSTREAM OF GUNNISON URANIUM MILL WHICH CLOSED IN 1962.

Number of Samples assayed for Ra-226 through period of record (1961-1972): 7
Mean Ra-226 concentration for period of record and 2σ deviation : 0.02 ± 0.02

Number of Samples assayed for U(total) through period of record (1962-1972): --
Mean U(total) concentration for period of record and 2σ deviation : ---

No U(total) samples taken



STATION LOCATION
(RMN-22)

TABLE A-18

(RMN-22)

070010
38 31 45.0 106 56 30.0
TOMICHI CREEK NEAR GUNNISON
08 COLORADO
COLORADO RIVER BASIN
UPPER COLORADO RIVER SUB BASIN
1118C030 2111204
2 0000 FEET DEPTH

DATE FROM TO	TIME OF DAY	DEPTH FEET	09503 RA-226 DISOLVED PC/L	09504 RA-226-D ERROR PC/L	22703 U-NAT DISOLVED UG/L
61/12/11			0.020		
61/12/31		COMP			
62/01/02			0.020		
62/01/27		COMP			
62/01/29			0.010		
62/03/03		COMP			
62/03/05			0.020		
62/03/31		COMP			
62/04/02			0.040		
62/04/28		COMP			
62/04/30			0.030		
62/06/02		COMP			
62/06/04			0.020		
62/06/30		COMP			

STATION DESCRIPTION

(RMN-24)

070011
38 34 45.0 106 55 20.0
GUNNISON RIVER UPS OF GUNNISON
08 COLORADO
COLORADO RIVER BASIN
UPPER COLORADO SUB BASIN
1116C030 2111204
2 0000 FEET DEPTH

	RIVER SYSTEM	II	III	IV	V	VI	VII	VIII	IX	X	XI	XII
INDEX	1101001	0126R0										
MILES	1101.40	0151.50										

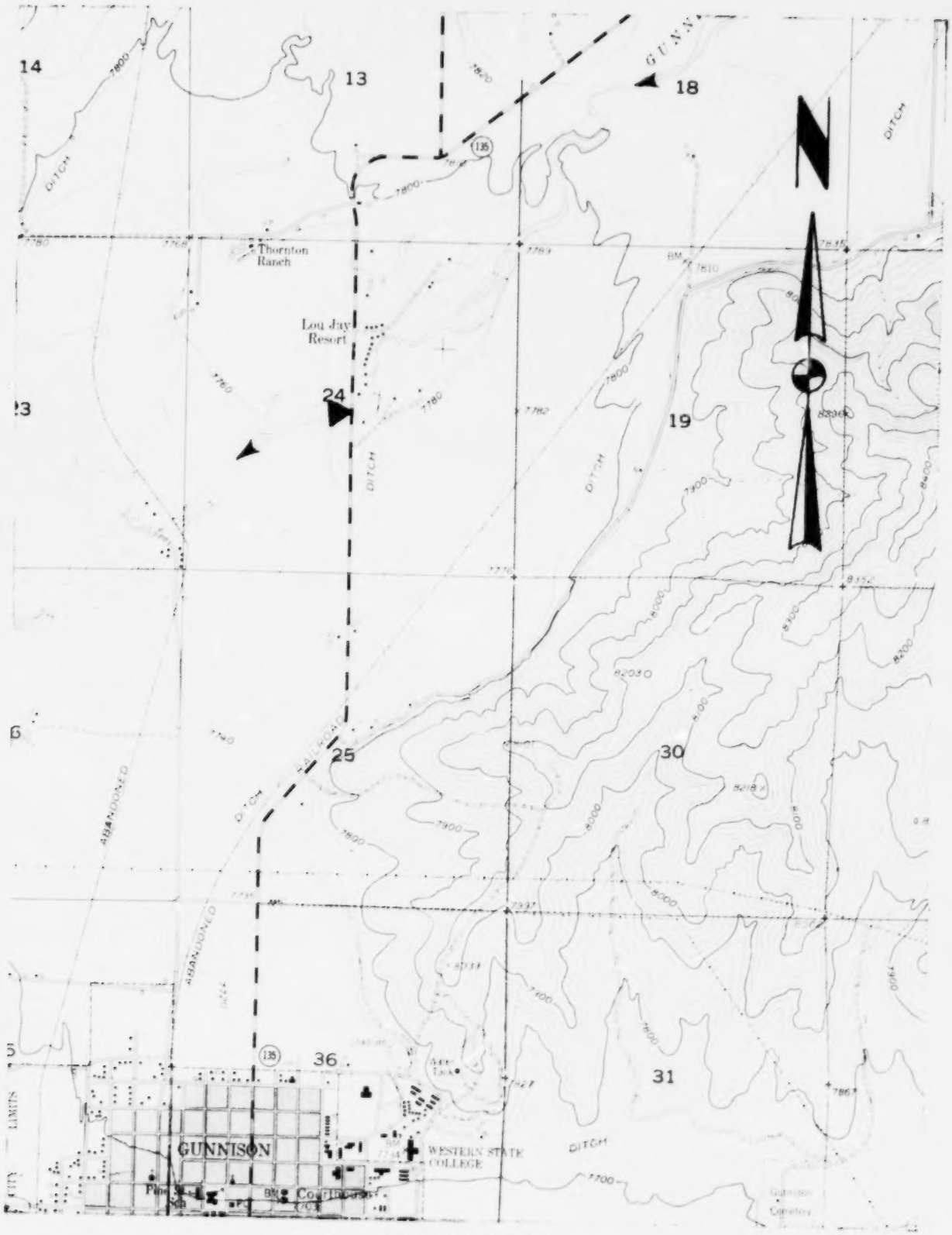
DESCRIPTION

CRBP NO. RMN-24. dWS-71
CENTER SEC 24. T50N. R1W

SAMPLED 3 MILES NORTH OF GUNNISON AT HWY 135 BRIDGE. 6 MILES UPSTREAM OF CONFLUENCE WITH TOMICHI CREEK IN GUNNISON COUNTY
TYPE DATA-RAD: GRAB. 3 PINTS/WEEK
SAMPLING STARTED 12/11/61 AND ENDED 6/30/65
REMARKS: THIS STATION PROVIDES BACKGROUND RADIOACTIVITY DATA FOR THE GUNNISON RIVER UPSTREAM FROM THE GUNNISON MINING COMPANY URANIUM MILL WHICH CLOSED IN 1962
TYPE FLOW MEAS-WTR STG REC AT 09114500

Number of Samples assayed for Ra-226 through period of record (1961-1972): 43
Mean Ra-226 concentration for period of record and 2σ deviation : 0.06 ± 0.20

Number of Samples assayed for U(total) through period of record (1962-1972): 33
Mean U(total) concentration for period of record and 2σ deviation : 1.21 ± 1.27



STATION LOCATION

(RMN-24)

TABLE A-19

(RMN-24)

070011
38 34 45.0 106 55 20.0
GUNNISON RIVER UPS OF GUNNISON
08 COLORADO
COLORADO RIVER BASIN
UPPER COLORADO SUB BASIN
1118C030 2111204
2 0000 FEET DEPTH

DATE FROM TO	TIME OF DAY	DEPTH FEET	09503 RA-226 DISOLVED PC/L	09504 RA-226-D ERROR PC/L	22703 U-NAT DISOLVED UG/L
61/12/11			0.030		
61/12/31		COMP			
62/01/02			0.050		
62/01/27		COMP			
62/01/29			0.070		
62/03/03		COMP			
62/03/05			0.060		
62/03/31		COMP			
62/04/02			0.040		
62/04/28		COMP			
62/04/30			0.040		
62/06/02		COMP			
62/06/04			0.040		
62/06/30		COMP			
62/07/02			0.020		
62/07/28		COMP			
62/07/30			0.030		
62/09/01		COMP			
62/09/03			0.680		
62/09/29		COMP			
62/10/01			0.050		1.300
62/11/03		COMP			
62/11/09			0.040		1.200
62/12/01		COMP			
62/12/03			0.060		1.900
62/12/29		COMP			
62/12/31			0.050		2.600
63/02/02		COMP			
63/02/04			0.040		1.200
63/03/02		COMP			
63/03/04			0.080		0.700
63/03/30		COMP			
63/04/01			0.030		0.500
63/04/27		COMP			
63/04/29			0.030		0.900
63/06/01		COMP			
63/06/03			0.040		0.600
63/06/29		COMP			
63/07/01			0.050		1.000
63/08/02		COMP			
63/08/06			0.050		0.000
63/08/30		COMP			
63/09/03			0.040		0.600
63/09/27		COMP			
63/09/30			0.030		1.100
63/11/01		COMP			
63/11/04			0.060		0.100
63/11/30		COMP			
63/12/02			0.060		2.500
63/12/28		COMP			
63/12/30			0.050		1.300
64/01/31		COMP			
64/02/03			0.110		1.300
64/02/28		COMP			
64/03/02			0.050		0.700
64/03/27		COMP			
64/03/30			0.010		1.500
64/05/01		COMP			
64/05/04			0.030		1.500
64/05/29		COMP			
64/06/01			0.050		0.600
64/06/26		COMP			
64/06/29			0.080		1.000
64/07/31		COMP			
64/08/03			0.040		1.400
64/08/28		COMP			
64/08/31			0.050		1.200
64/10/02		COMP			
64/10/05			0.060		1.700
64/10/30		COMP			
64/11/02			0.060		1.300
64/11/27		COMP			
64/11/30			0.080		1.900
65/01/02		COMP			
65/01/04			0.030		1.700
65/01/29		COMP			
65/02/01			0.050		1.400
65/02/26		COMP			
65/03/01			0.050		1.400
65/04/02		COMP			

TABLE A-19 (Cont.)

(RMN-24)

DATE FROM TO	TIME OF DAY	DEPTH FEET	09503 RA-226 DISOLVED PC/L	09504 RA-226-D ERROR PC/L	22703 U-NAT DISOLVED UG/L
65/04/05			0.010		0.900
65/04/30		COMP			
65/05/03			0.050		0.300
65/05/28		COMP			
65/05/31			0.040		2.500
65/06/30		COMP			

070011
38 34 45.0 106 55 20.0
GUNNISON RIVER UPS OF GUNNISON
08 COLORADO
COLORADO RIVER BASIN
UPPER COLORADO SUB BASIN
1118C030 2111204
2 0000 FEET DEPTH

STATION DESCRIPTION

(RMN-25)

070012
38 31 15.0 106 59 30.0
GUNNISON RIVER DWS OF GUNNISON
08 COLORADO
COLORADO RIVER BASIN
UPPER COLORADO SUB BASIN
111RC030 2111204
2 0000 FEET .DEPTH

RIVER SYSTEM II III IV V VI VII VIII IX X XI XII
INDEX 1101001 012680
MILES 1101.80 0144.50

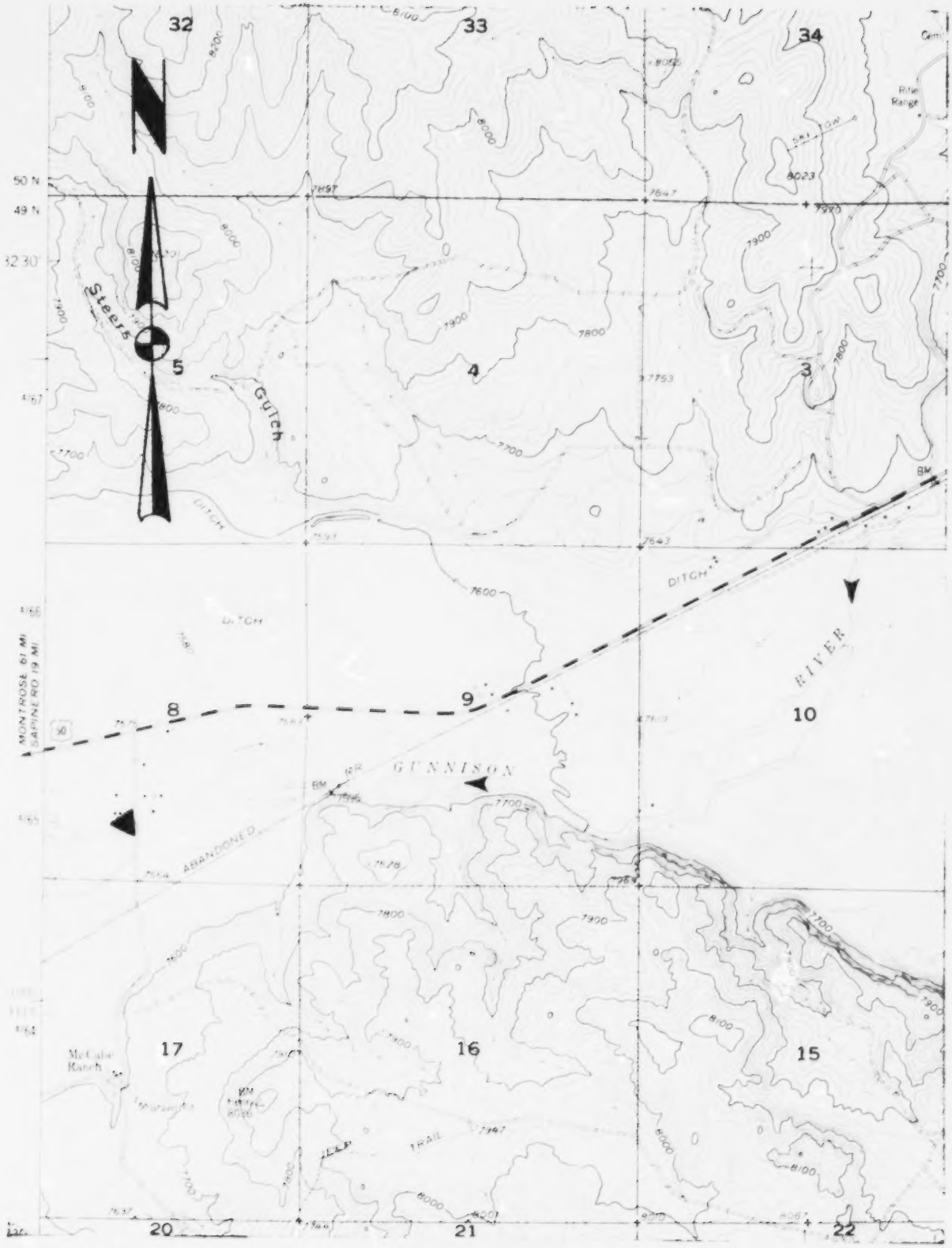
DESCRIPTION

CRRP NO. RMN-25, BWS-70
SW1/4, SW1/4, SEC 8, T49N,R1W

SAMPLED SOUTHWEST OF GUNNISON AT COUNTY ROAD BRIDGE, 11/2 MILES FROM THE CONFLUENCE WITH TOMICHI CREEK IN GUNNISON
TYPE DATA-RAD: GRAB, 3 PINTS/WEEK
SAMPLING STARTED 12/11/61 AND ENDED 6/30/65
TYPE FLOW MEAS-WTR STG REC, 09119000 PLUS 09114500

Number of Samples assayed for Ra-226 through period of record (1961-1972): 46
Mean Ra-226 concentration for period of record and 2σ deviation : 0.04 ± 0.06

Number of Samples assayed for U(total) through period of record (1962-1972): 33
Mean U(total) concentration for period of record and 2σ deviation : 2.26 ± 2.10



STATION LOCATION

(RMN-25)

A-120

TABLE A-20

(RMN-25)

070012
38 31 15.0 106 59 30.0
GUNNISON RIVER DWS OF GUNNISON
08 COLORADO
COLORADO RIVER BASIN
UPPER COLORADO SUB BASIN
1118C030 2111204
2 0000 FEET DEPTH

DATE FROM TO	TIME OF DAY	DEPTH FEET	09503 RA-226 DISOLVED PC/L	09504 RA-226-D ERROR PC/L	22703 U-NAT DISOLVED UG/L
61/12/11			0.040		
61/12/31		COMP			
62/01/02			0.030		
62/01/27		COMP			
62/01/29			0.060		
62/03/03		COMP			
62/03/05			0.030		
62/03/31		COMP			
62/04/02			0.020		
62/04/28		COMP			
62/04/30			0.010		
62/05/02		COMP			
62/06/04			0.040		
62/06/30		COMP			
62/07/02			0.020		
62/07/28		COMP			
62/07/30			0.040		
62/09/01		COMP			
62/09/03			0.030		
62/09/08		COMP			
62/09/10			0.040		
62/09/15		COMP			
62/09/17			0.210		
62/09/22		COMP			
62/09/24			0.040		
62/09/29		COMP			
62/10/01			0.040		3.000
62/11/03		COMP			
62/11/05			0.050		2.300
62/12/01		COMP			
62/12/03			0.060		2.600
62/12/29		COMP			
62/12/31			0.090		3.200
63/02/02		COMP			
63/02/04			0.030		3.200
63/03/02		COMP			
63/03/04			0.060		2.000
63/03/30		COMP			
63/04/01			0.040		0.900
63/04/27		COMP			
63/04/29			0.060		0.400
63/06/01		COMP			
63/06/03			0.060		1.000
63/06/29		COMP			
63/07/01			0.050		0.600
63/08/02		COMP			
63/08/06			0.040		0.700
63/08/30		COMP			
63/09/03			0.030		1.500
63/09/27		COMP			
63/09/30			0.030		1.600
63/11/01		COMP			
63/11/04			0.050		1.300
63/11/29		COMP			
63/12/02			0.040		3.600
63/12/28		COMP			
63/12/31			0.030		2.700
64/01/31		COMP			
64/02/03			0.030		2.900
64/02/28		COMP			
64/03/02			0.030		1.800
64/03/27		COMP			
64/03/30			0.080		2.900
64/05/01		COMP			
64/05/04			0.030		2.200
64/05/29		COMP			
64/06/01			0.060		1.000
64/06/26		COMP			
64/06/29			0.060		1.900
64/07/31		COMP			
64/08/03			0.040		1.600
64/08/28		COMP			
64/08/31			0.040		2.000
64/10/02		COMP			
64/10/05			0.050		2.400
64/10/30		COMP			
64/11/02			0.030		4.300
64/11/27		COMP			
64/11/30			0.040		4.300
65/01/02		COMP			

TABLE A-20 (Cont.)

(RMN-25)

DATE FROM TO	TIME OF DAY	DEPTH FEET	09503 RA-226 DISOLVED PC/L	09504 RA-226-D ERROR PC/L	22703 U-NAT DISOLVED UG/L
65/01/04			0.050		3.600
65/01/29		COMP			
65/02/01			0.030		3.700
65/02/26		COMP			
65/03/01			0.030		3.200
65/04/01		COMP			
65/04/05			0.030		2.200
65/04/30		COMP			
65/05/03			0.030		1.600
65/05/28		COMP			
65/05/31			0.030		2.400
65/06/30		COMP			

070012
38 31 15.0 106 59 30.0
GUNNISON RIVER DWS OF GUNNISON
08 COLORADO
COLORADO RIVER BASIN
UPPER COLORADO SUB BASIN
1118C030 2111204
2 0000 FEET DEPTH

STATION DESCRIPTION

(RMN-26)

070013
38 41 00.0 108 58 45.0
DOLORES RIVER NEAR GATEWAY
08 COLORADO
COLORADO RIVER BASIN
UPPER COLORADO SUB BASIN
111HC030 2111204
2 0000 FEET DEPTH

	RIVER SYSTEM	II	III	IV	V	VI	VII	VIII	IX	X	XI	XII
INDEX	1101001	011940										
MILES	1027.10	0031.70										

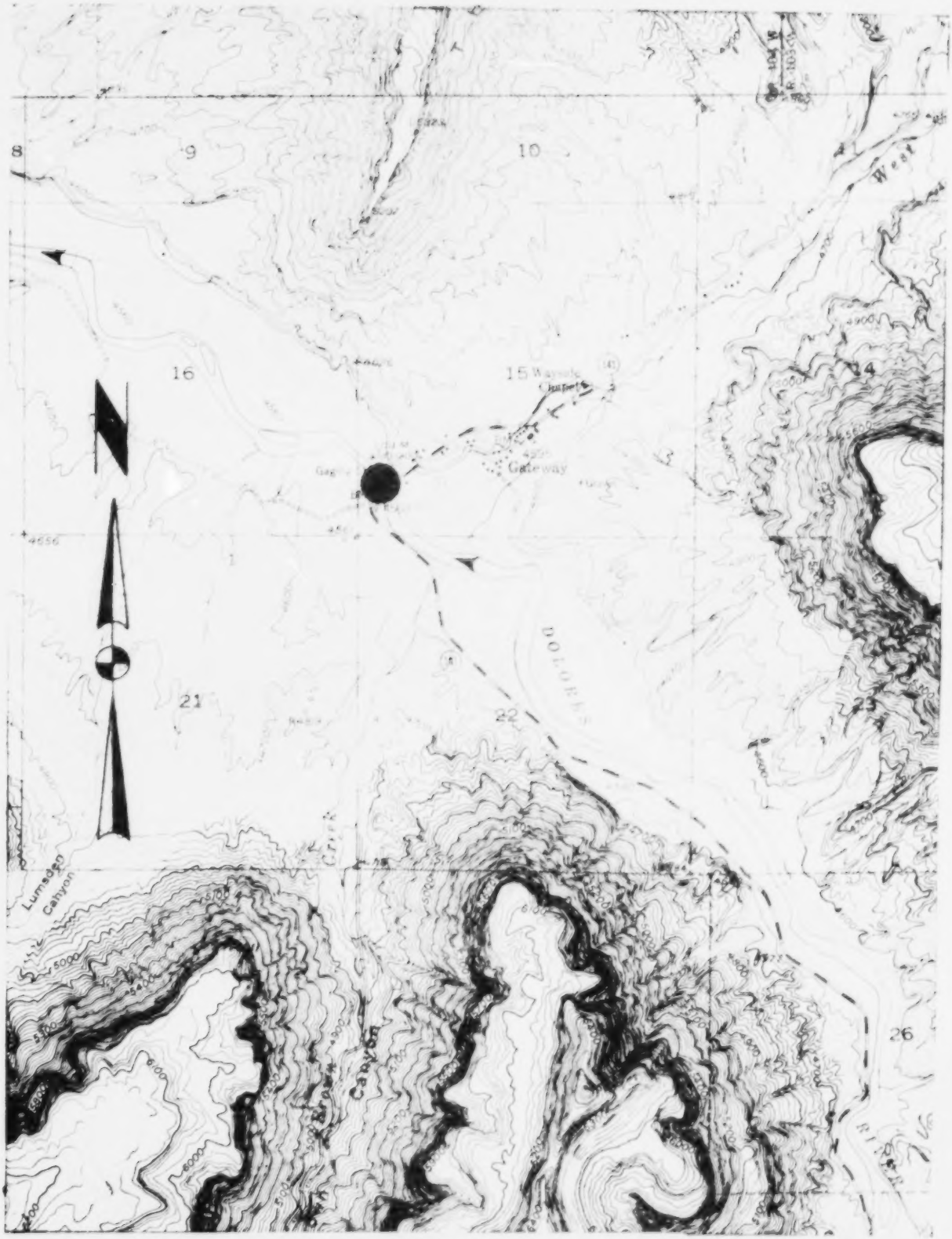
DESCRIPTION

CRBP NO. RMN-26, BWS-67, USGS-09-179500
SW1/4, SW1/4, SEC 15, T51N, R19W

SAMPLED AT HWY 141 BRIDGE NEAR GATEWAY, COLORADO IN MESA COUNTY
TYPE DATA-RAD, BACT: GRAB, 3 PINTS/WEEK
SAMPLING STARTED 10/30/61 AND IS ONGOING
REMARKS: THIS STATION PROVIDES RADIOACTIVITY DATA FOR THE DOLORES RIVER DOWNSTREAM FROM THE URANIUM MILLS LOCATED AT URAVAN, NATURITA AND SLICK ROCK, COLORADO
TYPE FLOW MEAS-WTR STG REC AT 09180500 NEAR CISCO, UTAH

Number of Samples assayed for Ra-226 through period of record (1961-1972): 200
Mean Ra-226 concentration for period of record and 2σ deviation : 0.95 ± 1.42

Number of Samples assayed for U(total) through period of record (1962-1972): 176
Mean U(total) concentration for period of record and 2σ deviation : 13.89 ± 21.88



STATION LOCATION

(RMN-26)

TABLE A-21

(RMN-26)

070013
38 41 00.0 108 58 45.0
DOLORES RIVER NEAR GATEWAY
08 COLORADO
COLORADO RIVER BASIN
UPPER COLORADO SUB BASIN
1118C030 2111204
2 0000 FEET DEPTH

DATE FROM TO	TIME OF DAY	DEPTH FEET	09503 RA-226 DISOLVED PC/L	09504 RA-226-D ERROR PC/L	22703 U-NAT DISOLVED UG/L
61/10/30			0.040		
61/12/02		COMP			
61/12/04			0.890		
61/12/30		COMP			
62/01/01			1.300		
62/01/27		COMP			
62/01/29			1.000		
62/03/03		COMP			
62/03/05			0.790		
62/03/31		COMP			
62/04/02			0.540		
62/04/28		COMP			
62/04/30			0.710		
62/06/02		COMP			
62/06/04			0.810		
62/06/30		COMP			
62/07/02			1.400		
62/07/28		COMP			
62/07/30			2.000		
62/09/01		COMP			
62/09/03			0.050		
62/09/04		COMP			
62/09/05			2.800		
62/09/06		COMP			
62/09/07			2.700		
62/09/08		COMP			
62/09/10			3.300		
62/09/11		COMP			
62/09/12			3.000		
62/09/13		COMP			
62/09/14			3.300		
62/09/15		COMP			
62/09/17			2.800		
62/09/18		COMP			
62/09/19			2.900		
62/09/20		COMP			
62/09/21			2.200		
62/09/22		COMP			
62/09/24			0.740		
62/09/25		COMP			
62/09/26			0.730		
62/09/27		COMP			
62/09/28			0.650		
62/09/29		COMP			
62/10/01			0.600		16.000
62/10/06		COMP			
62/10/08			0.810		2.200
62/10/13		COMP			
62/10/15			0.710		15.000
62/10/20		COMP			
62/10/22			0.480		17.000
62/10/27		COMP			
62/10/29			0.600		4.600
62/11/03		COMP			
62/11/05			0.790		2.300
62/11/10		COMP			
62/11/12			0.750		1.300
62/11/17		COMP			
62/11/19			0.790		4.100
62/11/24		COMP			
62/11/26			0.800		4.300
62/12/01		COMP			
62/12/03			0.730		2.300
62/12/08		COMP			
62/12/10			0.790		1.700
62/12/15		COMP			
62/12/17			1.900		1.900
62/12/22		COMP			
62/12/24			1.460		7.100
62/12/29		COMP			
62/12/31			1.050		5.600
63/01/05		COMP			
63/01/07			1.240		6.900
63/01/13		COMP			
63/01/14			1.540		10.000
63/01/19		COMP			
63/01/21			1.160		14.000
63/01/26		COMP			
63/01/28			1.630		23.000
63/02/02		COMP			

TABLE A-21 (Cont.)

(RMN-26)

070013
38 41 00.0 108 58 45.0
DOLORES RIVER NEAR GATEWAY
08 COLORADO
COLORADO RIVER BASIN
UPPER COLORADO SUB BASIN
1118C030 2111204
2 0000 FEET DEPTH

DATE FROM TO	TIME OF DAY	DEPTH FEET	09503 RA-226 DISOLVED PC/L	09504 RA-226-D ERROR PC/L	22703 U-NAT DISOLVED UG/L
63/02/04			0.610		20.000
63/02/09		COMP			
63/02/11			0.960		24.000
63/02/16		COMP			
63/02/18			1.000		9.900
63/02/23		COMP			
63/02/25			1.040		3.500
63/03/02		COMP			
63/03/04			1.080		0.800
63/03/10		COMP			
63/03/11			1.510		0.100
63/03/16		COMP			
63/03/18			1.290		1.300
63/03/24		COMP			
63/03/25			0.510		5.500
63/03/30		COMP			
63/04/01			0.430		11.000
63/04/06		COMP			
63/04/08			0.500		12.000
63/04/14		COMP			
63/04/15			0.380		12.000
63/04/20		COMP			
63/04/22			0.990		3.000
63/04/28		COMP			
63/04/29			0.790		2.900
63/05/04		COMP			
63/05/06			0.640		7.000
63/05/11		COMP			
63/05/13			0.490		4.300
63/05/18		COMP			
63/05/20			0.610		4.700
63/05/25		COMP			
63/05/27			0.790		2.600
63/06/01		COMP			
63/06/02			0.960		1.400
63/06/08		COMP			
63/06/10			0.930		3.500
63/06/15		COMP			
63/06/17			0.960		4.400
63/06/22		COMP			
63/06/24			0.910		3.200
63/06/29		COMP			
63/07/02			1.160		15.000
63/08/02		COMP			
63/08/05			0.510		25.000
63/08/30		COMP			
63/09/02			1.340		29.000
63/09/27		COMP			
63/09/30			1.750		16.000
63/11/02		COMP			
63/11/05			2.230		22.000
63/11/29		COMP			
63/12/02			1.700		35.000
63/12/26		COMP			
63/12/30			2.200		28.000
64/02/01		COMP			
64/02/04			1.800		
64/02/28		COMP			
64/03/02			1.650		51.000
64/03/28		COMP			
64/03/30			0.810		34.000
64/05/01		COMP			
64/05/04			0.480		6.800
64/05/28		COMP			
64/06/01			0.510		4.000
64/06/26		COMP			
64/06/29			0.950		13.000
64/08/01		COMP			
64/08/03			0.400		9.200
64/08/29		COMP			
64/08/31			1.300		33.000
64/10/02		COMP			
64/10/05			0.750		31.000
64/10/31		COMP			
64/11/02			1.800		50.000
64/11/27		COMP			
64/11/30			0.850		33.000
65/01/01		COMP			
65/01/04			0.840		32.000
65/01/29		COMP			

TABLE A-21 (Cont.)

(RMN-26)

070013
38 41 00.0 108 58 45.0
DOLORES RIVER NEAR GATEWAY
08 COLORADO
COLORADO RIVER BASIN
UPPER COLORADO SUB BASIN
1118C030 2111204
2 0000 FEET DEPTH

DATE FROM TO	TIME OF DAY	DEPTH FEET	09503 RA-226 DISOLVED PC/L	09504 RA-226-D ERROR PC/L	22703 U-NAT DISOLVED UG/L
65/02/01			1.100		29.000
65/02/26		COMP			
65/03/02			0.820		22.000
65/04/03		COMP			
65/04/05			0.470		10.000
65/05/01		COMP			
65/05/03			0.370		2.900
65/05/29		COMP			
65/05/31			0.370		4.400
65/07/02		COMP			
65/07/05			0.840		6.500
65/07/31		COMP			
65/08/02			0.470		9.500
65/08/27		COMP			
65/08/30			0.650		12.000
65/10/01		COMP			
65/10/04			0.530		14.000
65/10/30		COMP			
65/11/01			0.720		12.000
65/11/27		COMP			
65/11/29			0.740		13.000
66/01/02		COMP			
66/01/04			0.840		19.000
66/01/29		COMP			
66/01/31			0.980		17.000
66/02/25		COMP			
66/02/28			0.440		10.000
66/04/01		COMP			
66/04/04			0.330		6.300
66/04/30		COMP			
66/05/02			0.350		5.900
66/05/27		COMP			
66/05/31			0.760		8.000
66/07/01		COMP			
66/07/05			1.760		20.000
66/07/29		COMP			
66/08/01			1.080		31.000
66/09/03		COMP			
66/09/05			1.860		43.000
66/09/30		COMP			
66/10/03			2.350		41.000
66/10/28		COMP			
66/10/31			1.960		45.000
66/12/02		COMP			
66/12/05			1.370		34.000
66/12/30		COMP			
67/01/02			1.670		28.000
67/01/28		COMP			
67/01/30			2.250		29.000
67/02/24		COMP			
67/02/27			0.990		17.000
67/03/29		COMP			
67/04/01			0.990		14.000
67/04/28		COMP			
67/05/01			0.800		10.000
67/05/26		COMP			
67/05/29			0.990		9.500
67/06/30		COMP			
67/07/03			0.990		11.000
67/07/29		COMP			
67/07/31			0.990		14.000
67/09/01		COMP			
67/09/05	10 00				
CP(T)-12			0.800	0.050	19.000
67/09/30	10 00				
67/10/02	10 00				
CP(T)-12			0.830	0.050	36.000
67/10/27	10 00				
67/10/31	10 00				
CP(T)-12			1.370	0.100	30.000
67/12/04	10 00				
67/12/06	10 00				
CP(T)-12			1.270	0.070	32.000
67/12/30	10 00				
68/01/01	10 00				
CP(T)-12			2.650	0.100	25.000
68/02/02	10 00				
68/02/05	10 00				
CP(T)-12			3.720	0.200	31.000
68/03/01	10 00				

TABLE A-21 (Cont.)
(RMN-26)

070013
38 41 00.0 108 58 45.0
DOLORES RIVER NEAR GATEWAY
08 COLORADO
COLORADO RIVER BASIN
UPPER COLORADO SUB BASIN
1118C030 2111204
2 0000 FEET DEPTH

DATE FROM TO	TIME OF DAY	DEPTH FEET	09503 RA-226 DISOLVED PC/L	09504 RA-226-D ERROR PC/L	22703 U-NAT DISOLVED UG/L
68/03/05	10 00				
CP(T)-04			2.840	0.100	23.000
68/03/30	10 00				
68/04/01	10 00				
CP(T)-12			0.760	0.030	15.000
68/04/27	10 00				
68/04/29	10 00				
CP(T)-18			0.210	0.030	5.700
68/05/31	10 00				
68/06/04			0.420	0.030	6.000
68/06/29		COMP			
68/07/01	10 00				
CP(T)-06			0.840	0.050	8.200
68/08/02	10 00				
68/08/05			0.900	0.050	15.000
68/08/30		COMP			
68/09/02			3.500	0.100	32.000
68/09/28		COMP			
68/09/30			2.100	0.100	36.000
68/11/02		COMP			
68/11/04			1.500	0.100	24.000
68/11/30		COMP			
68/12/02			1.700	0.100	40.000
68/12/28		COMP			
68/12/30			2.000	0.100	23.000
69/02/01		COMP			
69/02/03			1.700	0.100	30.000
69/03/01		COMP			
69/03/03			1.100	0.100	22.000
69/03/29		COMP			
69/03/31			0.430	0.030	6.900
69/05/03		COMP			
69/05/05			0.300	0.030	4.200
69/05/31		COMP			
69/06/03			0.860	5.000	8.400
69/06/27		COMP			
69/08/28			0.690	0.050	37.000
69/09/04			0.730	0.050	18.000
69/09/25		COMP			
69/10/02			9.600	0.300	22.000
69/10/30		COMP			
69/11/06			0.730	0.050	11.000
69/11/26		COMP			
69/12/04			0.700	0.050	13.000
69/12/26		COMP			
70/01/09			1.020	0.060	16.000
70/01/29		COMP			
70/02/05			0.610	0.040	12.000
70/02/26		COMP			
70/03/05			0.890	0.050	16.000
70/03/26		COMP			
70/04/02			0.860	0.060	10.000
70/05/01		COMP			
70/05/08			0.170	0.020	2.700
70/05/28		COMP			
70/06/04			0.340	0.030	3.600
70/06/25		COMP			
70/07/02			0.690	0.050	7.500
70/07/24		COMP			
70/07/30			0.510	0.040	8.800
70/08/27		COMP			
70/09/03			0.510	0.040	7.600
70/10/01		COMP			
70/10/07			0.550	0.040	13.000
70/10/29		COMP			
70/11/05			0.410	0.030	16.000
70/11/25		COMP			
70/11/17			0.520	0.040	2.200
70/11/18			0.510	0.040	5.800
70/12/03			0.520	0.040	13.000
70/12/31		COMP			
71/01/07			0.680	0.050	10.000
71/01/28		COMP			
71/02/03			0.510	0.040	10.000
71/02/25		COMP			
71/03/04			0.690	0.050	11.000
71/04/01		COMP			
71/04/08			0.230	0.020	4.200
71/04/28		COMP			
71/05/06			0.230	0.020	3.100
71/05/27		COMP			

TABLE A-21 (Cont.)

(RMN-26)

070013
38 41 00.0 108 58 45.0
DOLORES RIVER NEAR GATEWAY
08 COLORADO
COLORADO RIVER BASIN
UPPER COLORADO SUB BASIN
1118C030 2111204
2 0000 FEET DEPTH

DATE FROM TO	TIME OF DAY	DEPTH FEET	09503 RA-226 DISOLVED PC/L	09504 RA-226-D ERROR PC/L	22703 U-NAT DISOLVED UG/L
71/06/03			0.170	0.020	1.900
71/07/01		COMP			
71/07/08			0.220		8.500
71/07/29		COMP			
71/08/05			0.100K		16.000
71/08/26		COMP			
71/09/02			0.700		11.000
71/09/30		COMP			
71/10/07			1.300		10.000
71/10/14			0.800		11.000
71/10/21			0.400		11.000
71/10/28			0.400		5.000
71/11/04			0.600		15.000
71/11/10			0.500		12.000
71/11/18			2.000		19.000
71/11/24			0.600		13.000
71/12/02			0.500		11.000
71/12/09			0.600		8.900
71/12/16			0.600		8.500
71/12/22			0.700		23.000
71/12/29			0.300		6.900
72/01/06			0.700		16.000
72/01/13			0.600		5.900
72/01/21			0.500		12.000
72/01/27			0.500		8.200
72/02/03			0.700		20.000
72/02/11			0.600		12.000
72/02/17			0.400		23.000
72/02/28			0.700		18.000
72/03/02			0.500		8.200
72/03/09			0.200		1.100
72/03/16			0.200		2.700
72/03/23			0.100		2.700
72/03/31			0.200		5.400
72/04/06			0.300		11.000
72/04/13			0.200		11.000
72/04/21			0.300		5.400
72/04/26			0.400		6.600
72/05/04			0.400		5.900
72/05/11			0.400		6.900
72/05/18			0.600		9.700
72/05/25			0.400		4.100
72/06/01			0.300		4.300
72/06/08			0.300		5.600
72/06/15			0.400		4.600
72/06/22			0.500		5.400
72/06/29			0.300		

STATION DESCRIPTION

(RMN-28)

070014
40 32 55.0 108 11 15.0
YAMPA RIVER DWS OF MAYBELL
08 COLORADO
COLORADO RIVER BASIN
GREEN RIVER SUB BASIN
1118C030 2111204
2 0000 FEET DEPTH

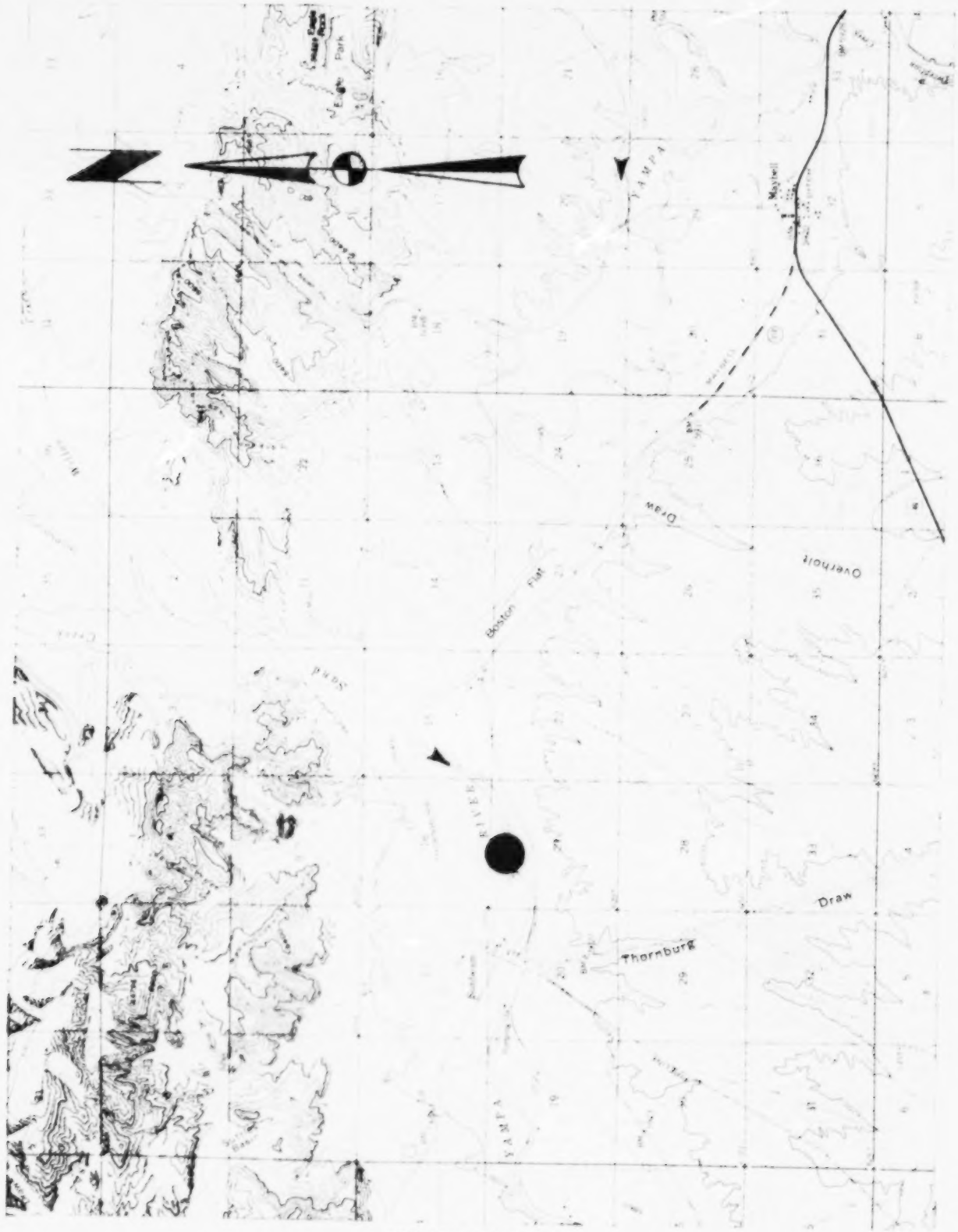
	RIVER SYSTEM	II	III	IV	V	VI	VII	VIII	IX	X	XI	XII
INDEX	1101001	010670	02380									
MILES	0929.90	0342.20	068.00	•	•	•	•	•	•	•	•	•

DESCRIPTION

CRBP NO. RMN-28, BWS-4
NW1/4, NW1/4, SEC 21, T7N, R96W
TYPE FLOW MEAS-WTR STG REC AT 09251000 NEAR MAYBELL, COLORADO
SAMPLED AT HWY 318 BRIDGE 7 MILES NORTHWEST OF MAYBELL, COLORADO
TYPE DATA-RAD: GRAB, 3 PINTS/WEEK
SAMPLING STARTED 12/10/61 AND WAS SAMPLED 3 TIMES/MONTH UNTIL 9/8/65
WHEN QUARTERLY SAMPLING STARTED 69/09/08 AND ENDED 05/16/72
REMARKS: THE UNION CARBIDE CORP URANIUM MILL NEAR MAYBELL CLOSED IN 1964
ITS LOCATION IS 25 MILES UPSTREAM ON-A DRY WASH TRIBUTARY TO LAY CREEK
WHICH JOINS THE YAMPA R 18 MILES UPSTREAM. DURING OPERATION THE MILL
PERIODICALLY RELEASED SMALL AMOUNTS OF EFFLUENT

Number of Samples assayed for Ra-226 through period of record (1961-1972): 47
Mean Ra-226 concentration for period of record and 2σ deviation : 0.08 ± 0.06

Number of Samples assayed for U(total) through period of record (1962-1972): 44
Mean U(total) concentration for period of record and 2σ deviation : 2.48 ± 3.25



STATION LOCATION
(RMN-28)

TABLE A-22

(RMN-28)

070014
40 32 55.0 108 11 15.0
YAMPA RIVER DWS OF MAYBELL
08 COLORADO
COLORADO RIVER BASIN
GREEN RIVER SUB BASIN
1118C030 2111204
2 0000 FEET DEPTH

DATE FROM TO	TIME OF DAY	DEPTH FEET	09503 RA-226 DISOLVED PC/L	09504 RA-226-D ERROR PC/L	22703 U-NAT DISOLVED UG/L
62/07/02			0.030		
62/07/28		COMP			
62/07/30			0.100		
62/08/25		COMP			
62/08/27			0.150		
62/09/29		COMP			
62/10/01			0.060		2.400
62/11/02		COMP			
62/11/05			0.100		2.300
62/11/30		COMP			
62/12/03			0.100		2.000
62/12/28		COMP			
62/12/31			0.100		2.800
63/02/01		COMP			
63/02/04			0.080		4.900
63/03/02		COMP			
63/03/04			0.060		8.000
63/03/29		COMP			
63/04/01			0.060		1.500
63/04/26		COMP			
63/04/29			0.080		1.800
63/05/31		COMP			
63/06/03			0.050		1.200
63/06/28		COMP			
63/07/01			0.140		4.000
63/08/02		COMP			
63/08/05			0.130		3.100
63/08/30		COMP			
63/09/02			0.080		1.800
63/09/27		COMP			
63/09/30			0.080		2.500
63/11/01		COMP			
63/11/04			0.090		0.600
63/11/29		COMP			
63/12/02			0.100		2.800
63/12/27		COMP			
63/12/30			0.090		0.800
64/01/31		COMP			
64/02/03			0.080		1.900
64/02/28		COMP			
64/03/02			0.100		0.900
64/03/27		COMP			
64/03/30			0.090		7.900
64/05/01		COMP			
64/05/04			0.060		1.800
64/05/29		COMP			
64/06/01			0.050		0.600
64/06/26		COMP			
64/06/29			0.060		1.700
64/07/31		COMP			
64/08/03			0.080		2.400
64/08/28		COMP			
64/08/31			0.140		3.500
64/10/02		COMP			
64/10/05			0.100		3.500
64/10/30		COMP			
64/11/02			0.130		2.900
64/11/27		COMP			
64/11/30			0.090		3.600
65/01/01		COMP			
65/01/04			0.080		2.300
65/01/29		COMP			
65/02/01			0.060		3.200
65/02/26		COMP			
65/03/01			0.090		2.900
65/04/02		COMP			
65/04/05			0.060		3.500
65/04/30		COMP			
65/05/03			0.030		1.800
65/05/24		COMP			
69/09/08			0.060	0.010	3.000
69/12/02			0.050	0.010	3.200
70/02/03			0.060	0.010	4.100
70/05/12			0.040	0.010	0.700
70/08/04			0.050	0.010	1.000
70/11/23			0.040	0.010	1.200
71/02/23			0.050	0.010	2.600
71/05/19			0.010	0.010	0.500
71/08/24			0.100K		1.000

TABLE A-22 (Cont.)

(RMN-28)

DATE FROM TO	TIME OF DAY	DEPTH FEET	09503 RA-226 DISOLVED PC/L	09504 RA-226-D ERROR PC/L	22703 U-NAT DISOLVED UG/L
71/11/30			0.100K		1.300
72/02/23			0.100K		3.100
72/05/16			0.100K		0.600

070014
40 32 55.0 108 11 15.0
YAMPA RIVER DWS OF MAYBELL
08 COLORADO
COLORADO RIVER BASIN
GREEN RIVER SUB BASIN
1118C030 2111204
2 0000 FEET DEPTH

STATION DESCRIPTION

(RMN-29)

490004
38 54 30.0 110 10 50.0
GREEN RIVER DWS OF GREEN RIVER
49 UTAH
COLORADO RIVER BASIN
GREEN RIVER SUB BASIN
1118C030 2111204
2 0000 FEET DEPTH

	RIVER SYSTEM	II	III	IV	V	VI	VII	VIII	IX	X	XI	XII
INDEX	1101001	010670										
MILES	0929.90	0114.20										

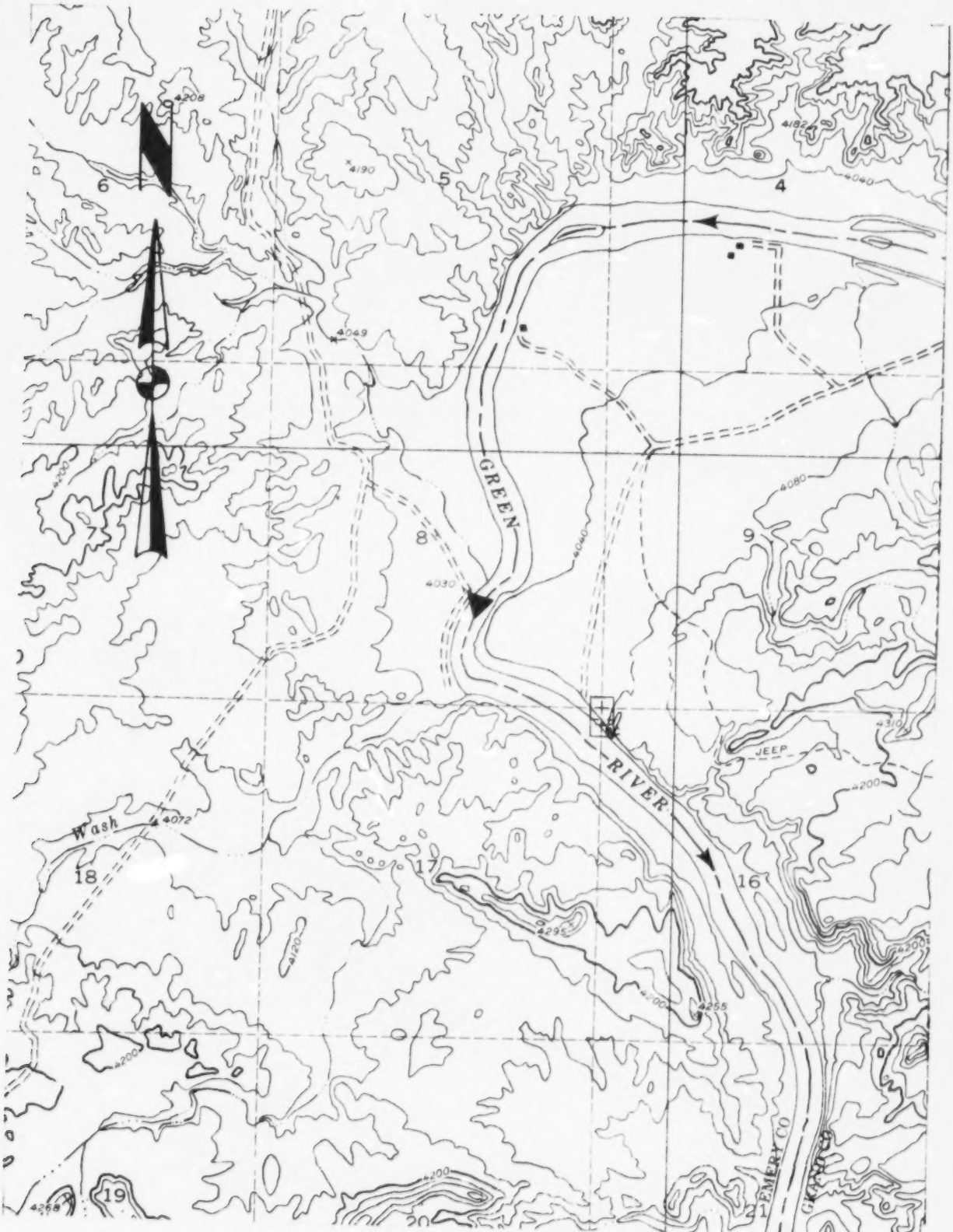
DESCRIPTION

CRHP NO. RMN-29
SE1/4, SEC 8, T22S, R16E

SAMPLED 9 MILES DOWNSTREAM FROM THE HWY 6 BRIDGE AT GREEN RIVER, UTAH AT END OF DIRT ROAD ON THE WEST SIDE, IN EMERY COUNTY
TYPE DATA-RAD: GRAB, 1GAL/WEEK; PRIOR TO 4/1/64, GRAB, 3 PINTS/WEEK
SAMPLING STARTED 7/16/62 AND ENDED 10/28/64
REMARKS: THE UNION CARBIDE CORP URANIUM MILL AT GREEN RIVER WAS CLOSED IN 1961 AND IS LOCATED SEVERAL THOUSAND FEET FROM THE RIVER ON A DRY WASH ENTERING THE RIVER 8 MILES UPSTREAM FROM THIS STATION
TYPE FLOW MEAS-WTR STG REC AT 09315000 AT GREEN RIVER, UTAH

Number of Samples assayed for Ra-226 through period of record (1961-1972): 29
Mean Ra-226 concentration for period of record and 2σ deviation : 0.09 ± 0.05

Number of Samples assayed for U(total) through period of record (1962-1972): 26
Mean U(total) concentration for period of record and 2σ deviation : 5.01 ± 3.01



STATION LOCATION

(RMN-29)

TABLE A-23

(RMN-29)

490004
38 54 30.0 110 10 50.0
GREEN RIVER DWS OF GREEN RIVER
49 UTAH
COLORADO RIVER BASIN
GREEN RIVER SUB BASIN
1118C030 2111204
2 0000 FEET DEPTH

DATE FROM TO	TIME OF DAY	DEPTH FEET	09503 RA-226 DISOLVED PC/L	09504 RA-226-D ERROR PC/L	22703 U-NAT DISOLVED UG/L
62/07/16			0.080		
62/07/27		COMP			
62/07/31			0.080		
62/08/31		COMP			
62/09/03			0.050		
62/09/29		COMP			
62/10/01			0.060		6.000
62/11/02		COMP			
62/11/04			0.050		7.300
62/11/30		COMP			
62/12/03			0.060		6.200
62/12/29		COMP			
62/12/31			0.100		6.600
63/01/04		COMP			
63/01/09			0.100		5.300
63/02/02		COMP			
63/02/08			0.090		5.100
63/02/27		COMP			
63/03/04			0.090		7.600
63/03/29		COMP			
63/04/01			0.080		3.200
63/04/26		COMP			
63/04/29			0.080		1.600
63/05/31		COMP			
63/06/03			0.100		2.600
63/06/30		COMP			
63/07/01			0.110		4.800
63/08/02		COMP			
63/08/05			0.110		5.500
63/08/30		COMP			
63/09/02			0.150		6.100
63/09/27		COMP			
63/09/30			0.130		7.400
63/11/01		COMP			
63/11/04			0.090		5.400
63/11/27		COMP			
63/12/02			0.060		5.000
63/12/27		COMP			
63/12/30			0.060		5.000
64/01/31		COMP			
64/02/03			0.090		4.100
64/02/28		COMP			
64/03/02			0.090		3.900
64/03/27		COMP			
64/03/30			0.090		6.300
64/05/01		COMP			
64/05/04			0.090		3.600
64/05/29		COMP			
64/06/01			0.090		3.300
64/06/26		COMP			
64/06/29			0.100		3.500
64/07/30		COMP			
64/08/03			0.140		5.500
64/08/24		COMP			
64/09/07			0.080		5.200
64/09/28		COMP			
64/10/05			0.060		4.300
64/10/28		COMP			

STATION DESCRIPTION

(RMN-30)

030020
32 43 00.0 114 43 00.0
COLO R AT NRTHRLY US-MEX BOUNDRY
04 ARIZONA
COLORADO RIVER
LOWER COLORADO RIVER
1118C030 6111204
2 0000 FEET DEPTH

RIVER SYSTEM
INDEX 1101001
MILES 0022.60

II III IV V VI VII VIII IX X XI XII

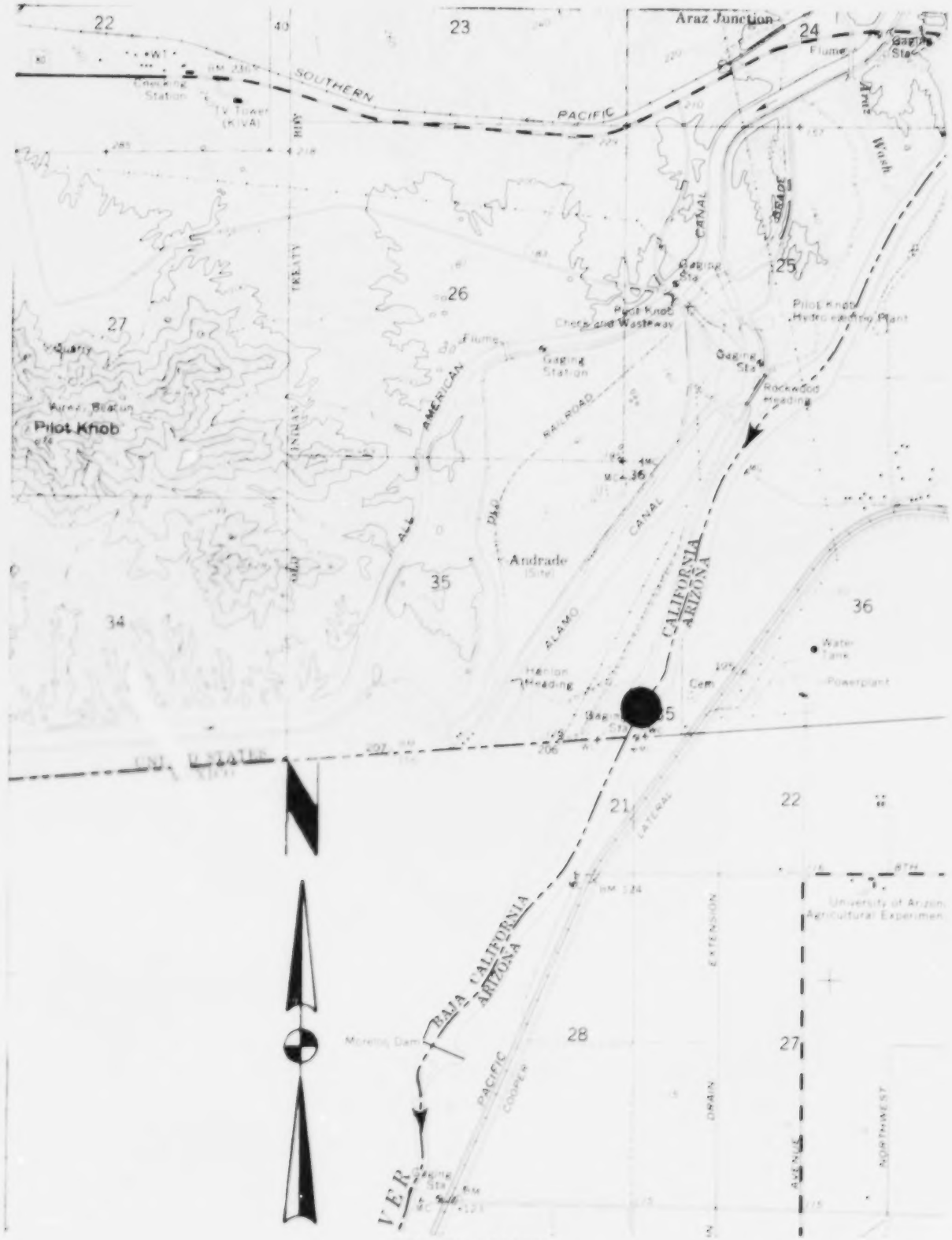
DESCRIPTION

RMN-30
NE1/4, NE1/4, SEC 21, T8S, R24W

SAMPLED AT GILA AND SALT RIVER MERIDIAN, IN ARIZONA, YUMA COUNTY AT NORTHERLY INTERNATIONAL BOUNDRY, 0.5 MILE EAST OF ANDRADE, 1.1MILES UPSTREAM FROM MORELOS DAM, 1.1MILES DOWNSTREAM FROM ROCKWOOD GATE, AND 6.4MILES DOWNSTREAM FROM GAGING STATION ON COLORADO RIVER BELOW YUMA CANAL WASTEWAY ON EAST BANK
SAMPLING STARTED 7/30/62 AND ENDED 7/04/72
SAMPLING STARTED 7/30/62 AND IS ONGOING
TYPE FLOW MEAS-WTR STG REC AT 09522000 AT INTERNATIONAL BOUNDARY

Number of Samples assayed for Ra-226 through period of record (1961-1972): 104
Mean Ra-226 concentration for period of record and 2σ deviation : 0.15 ± 0.10

Number of Samples assayed for U(total) through period of record (1962-1972): 99
Mean U(total) concentration for period of record and 2σ deviation : 7.32 ± 3.23



STATION LOCATION

(RMN-30)

TABLE A-24

(RMN-30)

030020
32 43 00.0 114 43 00.0
COLO R AT NRTHRLY US-MEX BOUNDRY
04 ARIZONA
COLORADO RIVER
LOWER COLORADO RIVER
1118C030 6111204
2 0000 FEET DEPTH

DATE FROM TO	TIME OF DAY	DEPTH FEET	09503 RA-226 DISOLVED PC/L	09504 RA-226-D ERROR PC/L	22703 U-NAT DISOLVED UG/L
62/07/30			0.160		
62/08/31		COMP			
62/09/04			0.160		
62/09/07		COMP			
62/09/10			0.160		
62/09/14		COMP			
62/09/17			0.160		
62/09/21		COMP			
62/09/24			0.160		
62/09/28		COMP			
62/10/02			0.210		9.600
62/11/02		COMP			
62/11/05			0.080		8.300
62/11/30		COMP			
62/12/03			0.140		8.000
62/12/28		COMP			
62/12/31			0.060		9.500
63/02/01		COMP			
63/02/04			0.130		11.000
63/03/01		COMP			
63/03/04			0.200		8.800
63/03/29		COMP			
63/04/01			0.210		9.200
63/04/26		COMP			
63/04/29			0.120		9.600
63/05/31		COMP			
63/06/03			0.320		9.200
63/06/28		COMP			
63/07/02			0.230		7.200
63/08/02		COMP			
63/08/05			0.250		7.900
63/08/30		COMP			
63/09/02			0.200		7.600
63/09/27		COMP			
63/09/30			0.140		6.700
63/11/01		COMP			
63/11/04			0.110		5.900
63/11/29		COMP			
63/12/02			0.110		7.100
63/12/27		COMP			
63/12/30			0.130		7.100
64/01/31		COMP			
64/02/03			0.110		7.300
64/02/28		COMP			
64/03/02			0.240		9.000
64/03/27		COMP			
64/03/30			0.190		8.200
64/05/01		COMP			
64/05/04			0.110		7.900
64/05/29		COMP			
64/06/01			0.160		7.500
64/06/25		COMP			
64/06/29			0.250		8.800
64/07/31		COMP			
64/08/03			0.250		8.100
64/08/28		COMP			
64/08/31			0.320		8.100
64/10/02		COMP			
64/10/05			0.110		9.200
64/10/30		COMP			
64/11/02			0.130		9.200
64/11/27		COMP			
64/11/30			0.110		8.800
64/12/31		COMP			
65/01/04			0.180		7.800
65/01/29		COMP			
65/02/01			0.130		8.400
65/02/26		COMP			
65/03/02			0.240		9.800
65/04/02		COMP			
65/04/05			0.150		8.200
65/04/30		COMP			
65/05/03			0.080		6.500
65/05/27		COMP			
65/06/01			0.180		8.600
65/07/02		COMP			
65/07/06			0.230		10.000
65/07/30		COMP			
65/08/02			0.250		10.000
65/08/27		COMP			

TABLE A-24 (Cont.)

(RMN-30)

DATE FROM TO	TIME OF DAY	DEPTH FEET	09503 RA-226 DISOLVED PC/L	09504 RA-226-D ERROR PC/L	22703 U-NAT DISOLVED UG/L
65/08/30			0.190		9.500
65/10/01		COMP			
65/10/04			0.090		11.000
65/10/29		COMP			
65/11/01			0.100		6.300
65/11/25		COMP			
65/11/29			0.150		6.400
65/12/30		COMP			
66/01/03			0.110		4.900
66/01/28		COMP			
66/01/31			0.110		6.400
66/02/25		COMP			
66/02/28			0.110		6.600
66/04/01		COMP			
66/04/04			0.180		8.700
66/04/29		COMP			
66/05/02			0.120		9.500
66/05/27		COMP			
66/05/31			0.180		7.000
66/07/01		COMP			
66/07/05			0.220		9.200
66/07/29		COMP			
66/08/01			0.220		7.400
66/09/02		COMP			
66/09/06			0.200		6.700
66/09/30		COMP			
66/10/03			0.140		4.300
66/10/28		COMP			
66/10/31			0.130		3.500
66/12/02		COMP			
66/12/05			0.140		5.000
66/12/30		COMP			
67/01/03			0.160		2.000
67/01/27		COMP			
67/01/30			0.150		5.900
67/02/24		COMP			
67/02/27			0.180		7.400
67/03/31		COMP			
67/04/03			0.190		7.400
67/04/28		COMP			

030020
32 43 00.0 114 43 00.0
COLO R AT NRTHRLY US-MEX BOUNDRY
04 ARIZONA
COLORADO RIVER
LOWER COLORADO RIVER
1118C030 6111204
2 0000 FEET DEPTH

DATE FROM TO	TIME OF DAY	DEPTH FEET	09503 RA-226 DISOLVED PC/L	09504 RA-226-D ERROR PC/L	22703 U-NAT DISOLVED UG/L
67/05/02			0.130		6.800
67/05/26		COMP			
67/05/29			0.200		6.500
67/06/30		COMP			
67/07/03			0.220		6.500
67/07/28		COMP			
67/07/31			0.200		7.600
67/09/01		COMP			
67/09/04			0.120		5.100
67/09/29		COMP			
67/10/02			0.150		5.800
67/10/27		COMP			
67/10/30			0.120		6.000
67/12/01		COMP			
67/12/04			0.200		5.600
67/12/29		COMP			
68/01/01			0.170		7.200
68/02/02		COMP			
68/02/12			0.120		7.400
68/03/01		COMP			
68/03/04			0.150		7.500
68/03/29		COMP			
68/04/01			0.200		7.900
68/04/26		COMP			
68/04/29			0.100		6.400
68/05/29		COMP			
68/06/07			0.130	0.020	7.700
68/06/28		COMP			
68/07/02			0.180	0.020	7.600
68/08/02		COMP			
68/08/05	10 00				
CP(T)-06			0.220	0.020	5.700
68/08/30	10 00				
68/09/03			0.130	0.010	6.600
68/09/27		COMP			
68/10/04			0.090	0.010	6.800
68/11/04		COMP			
68/11/04			0.100	0.010	7.300
68/11/29		COMP			
68/12/02			0.110	0.010	7.500
68/12/27		COMP			

TABLE A-24 (Cont.)

(RMN-30)

030020
32 43 00.0 114 43 00.0
COLO R AT NRTHRLY US-MEX BOUNDRY
04 ARIZONA
COLORADO RIVER
LOWER COLORADO RIVER
1118C030 6111204
2 0000 FEET DEPTH

DATE FROM TO	TIME OF DAY	DEPTH FEET	09503 RA-226 DISOLVED PC/L	09504 RA-226-D ERROR PC/L	22703 U-NAT DISOLVED UG/L
68/12/30			0.110	0.020	7.900
69/01/31		COMP			
69/02/03			0.090	0.010	6.800
69/02/28		COMP			
69/03/03			0.150	0.020	8.800
69/03/28		COMP			
69/04/01			0.170	0.020	7.700
69/05/04		COMP			
69/05/05			0.100	0.010	8.400
69/05/29		COMP			
69/06/02			0.150	0.010	6.400
69/06/27		COMP			
69/06/30			0.150	0.020	8.000
69/08/01		COMP			
69/08/04			0.190	0.020	7.000
69/08/29		COMP			
69/09/23			0.120	0.020	7.000
69/10/21			0.130	0.020	6.000
69/11/20			0.110	0.020	5.500
70/01/23			0.090	0.020	5.700
70/02/19			0.140	0.020	6.300
70/03/19			0.130	0.020	6.600
70/04/24			0.110	0.020	7.400
70/06/19			0.110	0.020	7.500
70/07/24			0.130	0.020	8.400
70/10/22			0.080	0.010	3.800
71/01/14			0.030	0.010	6.100
71/04/21			0.150	0.020	8.800
71/07/22			0.170		4.200
71/10/15			0.100		5.000
72/01/21			0.100		4.800
72/04/20			0.100K		6.100

STATION DESCRIPTION

(RMN-31)

030000
36 51 53.0 111 35 15.0
COLORADO RIVER AT PAGE
04 ARIZONA
COLORADO RIVER BASIN
MIDDLE COLORADO-SAN JUAN SUB BASIN
111MC030 2111204
2 0000 FEET DEPTH

RIVER SYSTEM II III IV V VI VII VIII IX X XI XII
INDEX 1101001
MILES 0727.10

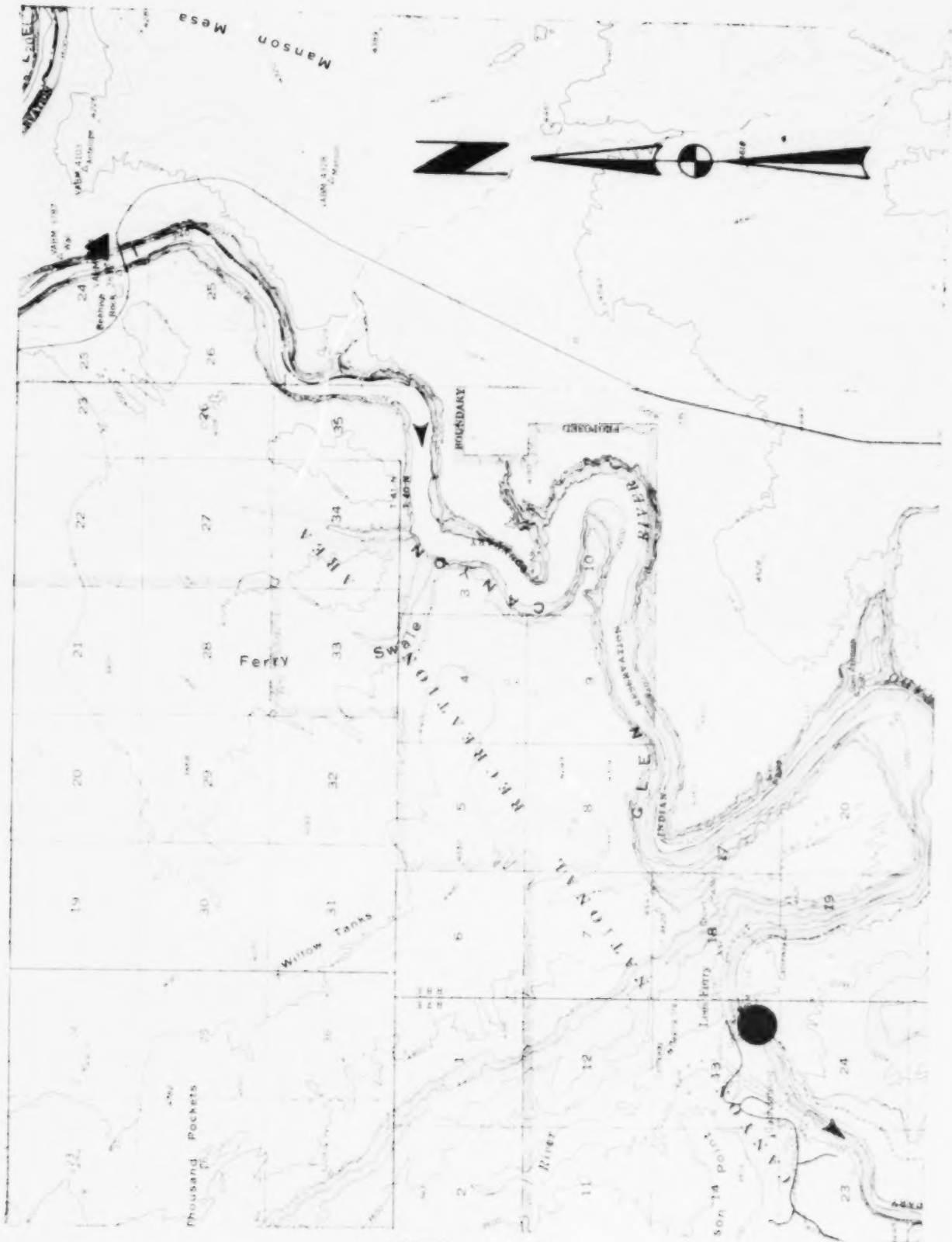
DESCRIPTION

CRBR NO. 3797.0•RMN-31• USGS-09-380000
NE1/4• SW1/4• SEC 24• T41N• R8E

SAMPLED AT PAGE MUNICIPAL WATER INTAKE UNTIL 09/22/69. NOW SAMPLED AT LEES FERRY. 09380000
TYPE DATA-RAD. BACT: 300CC COMP/WEEK
TYPE FLOW MEAS-WTR STG REC AT 09350000 AT LEES FERRY. ARIZONA
SAMPLING STARTED 5/06/63 AND IS ONGOING
REMARKS: BACTERIOLOGICAL SAMPLING STARTED FEB. 1968

Number of Samples assayed for Ra-226 through period of record (1961-1972): 100
Mean Ra-226 concentration for period of record and 2σ deviation : 0.17 ± 0.13

Number of Samples assayed for U(total) through period of record (1962-1972): 100
Mean U(total) concentration for period of record and 2σ deviation : 6.46 ± 4.47



STATION LOCATION

(RMN-31)

TABLE A-25

(RMN-31)

030000
36 51 53.0 111 35 15.0
COLORADO RIVER AT PAGE
04 ARIZONA
COLORADO RIVER BASIN
MIDDLE COLORADO-SAN JUAN SUB BASIN
1118C030 2111204
2 0000 FEET DEPTH

DATE FROM TO	TIME OF DAY	DEPTH FEET	09503 RA-226 DISOLVED PC/L	09504 RA-226-D ERROR PC/L	22703 U-NAT DISOLVED UG/L
63/05/06			0.360		13.000
63/05/27		COMP			
63/06/01			0.290		11.000
63/06/30		COMP			
63/07/01			0.290		9.200
63/07/31		COMP			
63/08/01			0.250		7.400
63/08/31		COMP			
63/09/01			0.160		7.100
63/09/30		COMP			
63/10/07			0.190		7.900
63/10/28		COMP			
63/11/04			0.180		8.600
63/11/25		COMP			
63/12/02			0.250		8.600
63/12/30		COMP			
64/01/01			0.250		8.400
64/01/31		COMP			
64/02/03			0.340		10.000
64/02/24		COMP			
64/03/02			0.300		7.500
64/03/30		COMP			
64/04/01			0.280		11.000
64/04/30		COMP			
64/05/04			0.290		9.100
64/05/25		COMP			
64/06/01			0.250		9.200
64/06/29		COMP			
64/07/06			0.290		11.000
64/07/26		COMP			
64/08/03			0.250		10.000
64/08/31		COMP			
64/09/14			0.200		6.900
64/09/21		COMP			
64/10/05			0.150		6.500
64/10/26		COMP			
64/11/02			0.200		7.800
64/11/30		COMP			
64/12/07			0.080		7.800
64/12/28		COMP			
65/01/04			0.050		9.400
65/01/25		COMP			
65/02/01			0.210		7.200
65/02/15		COMP			
65/03/08			0.210		7.600
65/03/22		COMP			
65/04/05			0.220		6.800
65/04/25		COMP			
65/05/03			0.250		7.500
65/05/24		COMP			
65/06/01			0.220		7.000
65/06/30		COMP			
65/07/05			0.120		3.600
65/07/26		COMP			
65/08/02			0.160		3.100
65/08/30		COMP			
65/09/20			0.200		2.800
65/09/27		COMP			
65/10/04			0.100		3.500
65/10/25		COMP			
65/11/01			0.130		3.200
65/11/29		COMP			
65/12/06			0.160		4.100
65/12/27		COMP			
66/01/03			0.150		4.900
66/01/31		COMP			
66/02/07			0.140		5.100
66/02/28		COMP			
66/03/07			0.190		5.200
66/03/28		COMP			
66/04/04			0.190		5.800
66/04/25		COMP			
66/05/02			0.180		3.700
66/05/16		COMP			
66/06/01			0.120		4.800
66/07/01			0.120		3.900
66/09/26			0.140		3.900
66/10/03			0.130		3.700
66/10/10		COMP			
66/12/02					4.500

TABLE A-25 (Cont.)

(RMN-31)

DATE FROM TO	TIME OF DAY	DEPTH FEET	09503 RA-226 DISOLVED PC/L	09504 RA-226-D ERROR PC/L	22703 U-NAT DISOLVED UG/L
67/01/13			0.100		5.200
67/03/01			0.040		6.400
67/06/01			0.070		5.100
67/07/01			0.200		6.600
67/08/01			0.190		6.900
67/09/01	10 00				
CP(T)-04			0.200	0.030	4.400
67/09/30	10 00				
67/10/01	10 00				
CP(T)-04			0.180	0.030	5.500
67/10/31	10 00				
67/11/01	10 00				
CP(T)-04			0.170	0.030	5.600
67/11/30	10 00				
67/12/01	10 00				
CP(T)-04			0.150	0.020	5.600
67/12/31	10 00				
68/01/01	10 00				
CP(T)-04			0.130	0.030	6.800
68/01/31	10 00				
68/02/01	10 00				
CP(T)-04			0.160	0.020	7.400
68/02/28	10 00				
68/03/01	10 00				
CP(T)-04			0.150	0.030	7.400
68/03/31	10 00				
68/04/01	10 00				
CP(T)-04			0.200	0.020	7.000
68/04/30	10 00				
68/04/29	10 00				
CP(T)-05			0.170	0.020	7.900
68/05/27	10 00				
68/06/03	10 00				
CP(T)-03			0.160	0.020	8.300
68/06/24	10 00				
68/07/01			0.150	0.020	6.100
68/07/29		COMP			
68/08/05	10 00				
CP(T)-04			0.230	0.020	3.700
68/08/26	10 00				

030000
36 51 53.0 111 35 15.0
COLORADO RIVER AT PAGE
04 ARIZONA
COLORADO RIVER BASIN
MIDDLE COLORADO-SAN JUAN SUB BASIN
1118C030 2111204
2 0000 FEET DEPTH

DATE FROM TO	TIME OF DAY	DEPTH FEET	09503 RA-226 DISOLVED PC/L	09504 RA-226-D ERROR PC/L	22703 U-NAT DISOLVED UG/L
68/09/03			0.180	0.020	5.600
68/09/23		COMP			
68/09/30			0.130	0.020	7.200
68/10/28		COMP			
68/11/04			0.150	0.020	6.800
68/11/26		COMP			
68/12/03			0.160	0.020	6.500
68/12/30		COMP			
69/01/06			0.120	0.010	6.600
69/01/29		COMP			
69/02/03			0.130	0.010	6.900
69/02/24		COMP			
69/03/03			0.180	0.020	8.100
69/03/24		COMP			
69/04/01			0.170	0.020	8.300
69/04/28		COMP			
69/05/05			0.200	0.030	7.700
69/05/26		COMP			
69/06/02			0.300	0.010	5.900
69/06/23		COMP			
69/07/07			0.150	0.020	6.700
69/07/28		COMP			
69/08/04			0.100	0.020	5.300
69/08/25		COMP			
69/09/01			0.140	0.020	5.100
69/09/22		COMP			
69/10/21			0.110	0.020	5.800
69/11/20			0.100	0.020	5.500
69/12/15			0.120	0.020	5.000
70/01/20			0.120	0.020	6.100
70/02/15			0.130	0.020	5.500
70/03/18			0.160	0.020	7.800
70/04/20			0.140	0.020	7.500
70/05/19			0.110	0.020	5.900
70/06/16			0.120	0.020	5.900
70/07/17			0.140	0.020	6.600
70/08/18			0.130	0.020	5.500
70/09/29			0.110	0.020	8.900
70/10/19			0.130	0.020	6.400

TABLE A-25 (Cont.)

(RMN-31)

030000
36 51 53.0 111 35 15.0
COLORADO RIVER AT PAGE
04 ARIZONA
COLORADO RIVER BASIN
MIDDLE COLORADO-SAN JUAN SUB BASIN
1118C030 2111204
2 0000 FEET DEPTH

DATE FROM TO	TIME OF DAY	DEPTH FEET	09503 RA-226 DISOLVED PC/L	09504 RA-226-D ERROR PC/L	22703 U-NAT DISOLVED UG/L
70/11/16			0.120	0.020	4.400
70/12/29					3.600
71/01/11			0.100	0.020	4.100
71/02/22			0.110	0.020	5.000
71/03/15			0.130	0.020	5.100
71/04/28			0.150	0.020	7.500
71/05/21			0.140	0.020	5.200
71/06/25			0.150	0.020	4.500
71/07/30			0.190		3.900
71/08/30			0.200		
71/09/30			0.200		2.900
71/12/27			0.200		2.600
72/01/04			0.100		4.600
72/03/20			0.100		6.400
72/04/20			0.200		5.900
72/05/12			0.400		16.000
72/06/27			0.200		

STATION DESCRIPTION

(RMN-32)

310000
36 00 40.0 114 44 40.0
COLORADO RIVER NR BOULDER CITY
32 30NEVADA
COLORADO RIVER
LOWER MAIN STEM
1118C030 77777777
2 0000 FEET DEPTH

	RIVER SYSTEM	II	III	IV	V	VI	VII	VIII	IX	X	XI	XII
INDEX	1101001											
MILES	0356.10	•	•	•	•	•	•	•	•	•	•	•

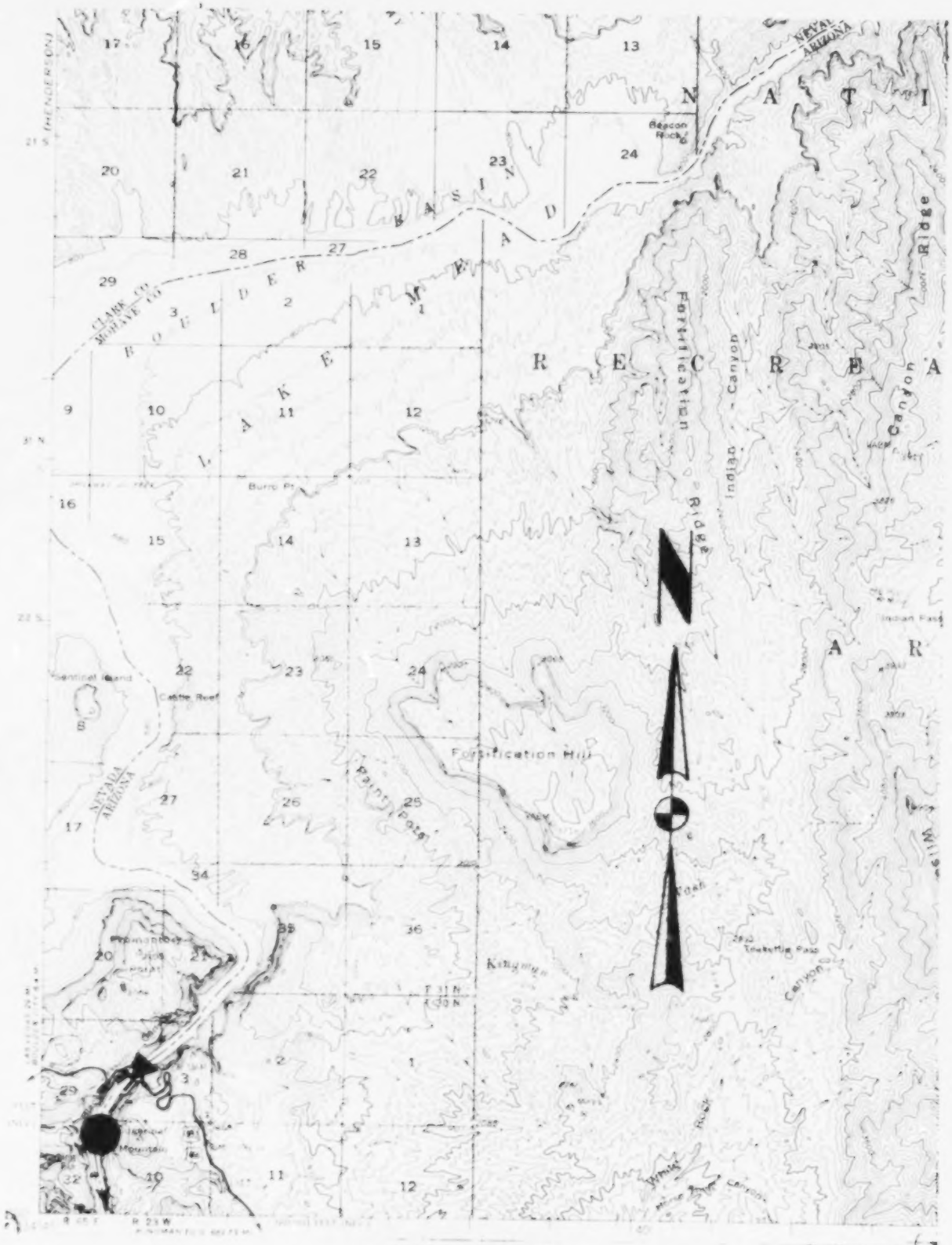
DESCRIPTION

RMN-32. USGS-09-421500
SW1/4. SW1/4. SEC 3. T30N. R23W

SAMPLED 0.3MILE DOWNSTREAM OF HOOVER DAM POWERHOUSE ON THE WEST BANK
TYPE DATA-RAD
SAMPLING STARTED 3/11/63 AND IS ONGOING BY REGION IX
TYPE FLOW MEAS-WTR STG REC 0.8MI. DOWNSTREAM OF 09421500. HOOVER DAM

Number of Samples assayed for Ra-226 through period of record (1961-1972): 96
Mean Ra-226 concentration for period of record and 2σ deviation : 0.29 ± 0.21

Number of Samples assayed for U(total) through period of record (1962-1972): 96
Mean U(total) concentration for period of record and 2σ deviation : 7.69 ± 2.66



STATION LOCATION

(RMN-32)

TABLE A-26

(RMN-32)

310000
36 00 40.0 114 44 40.0
COLORADO RIVER NR BOULDER CITY
32 30NEVADA
COLORADO RIVER
LOWER MAIN STEM
1118C030 77777777
2 0000 FEET DEPTH

DATE FROM TO	TIME OF DAY	DEPTH FEET	09503 RA-226 DISOLVED PC/L	09504 RA-226-D ERROR PC/L	22703 U-NAT DISOLVED UG/L
63/03/11			0.380		10.000
63/03/29		COMP			
63/04/01			0.380		8.800
63/04/26		COMP			
63/04/29			0.360		8.000
63/05/31		COMP			
63/06/03			0.400		7.800
63/06/28		COMP			
63/07/01			0.310		7.400
63/08/02		COMP			
63/08/05			0.310		7.000
63/08/30		COMP			
63/09/02			0.310		7.900
63/09/27		COMP			
63/09/30			0.340		8.600
63/11/01		COMP			
63/11/04			0.300		5.600
63/11/29		COMP			
63/12/04			0.280		8.100
63/12/27		COMP			
63/12/30			0.310		7.400
64/01/31		COMP			
64/02/03			0.500		8.600
64/02/28		COMP			
64/03/02			0.330		9.000
64/03/27		COMP			
64/03/30			0.300		9.600
64/04/29		COMP			
64/05/04			0.300		7.900
64/05/29		COMP			
64/06/01			0.250		6.900
64/06/26		COMP			
64/06/29			0.270		8.900
64/07/31		COMP			
64/08/03			0.330		9.200
64/08/28		COMP			
64/08/31			0.210		8.800
64/10/02		COMP			
64/10/05			0.330		11.000
64/10/30		COMP			
64/11/02			0.330		8.800
64/11/27		COMP			
64/11/30			0.350		11.000
65/01/01		COMP			
65/01/04			0.340		8.500
65/01/29		COMP			
65/02/02			0.300		9.500
65/02/26		COMP			
65/03/01			0.380		10.000
65/04/02		COMP			
65/04/05			0.390		9.100
65/04/30		COMP			
65/05/03			0.350		8.400
65/05/28		COMP			
65/06/01			0.300		9.700
65/07/02		COMP			
65/07/06			0.380		9.900
65/07/26		COMP			
65/08/02			0.440		9.100
65/08/23		COMP			
65/08/30			0.410		11.000
65/09/27		COMP			
65/10/04			0.500		9.000
65/10/18		COMP			
65/11/01			0.530		8.500
65/11/22		COMP			
65/11/29			0.510		8.300
66/01/03		COMP			
66/01/07			0.590		8.000
66/01/24		COMP			
66/02/14			0.390		7.600
66/02/28		COMP			
66/02/28			0.410		6.300
66/03/28		COMP			
66/04/04			0.400		8.400
66/04/25		COMP			
66/05/02			0.430		8.900
66/05/23		COMP			
66/05/31			0.440		6.000
66/06/27		COMP			

TABLE A-26 (Cont.)

(RMN-32)

DATE FROM TO	TIME OF DAY	DEPTH FEET	09503 RA-226 DISOLVED PC/L	09504 RA-226-D ERROR PC/L	22703 U-NAT DISOLVED UG/L
66/07/05			0.380		7.500
66/07/25		COMP			
66/08/01			0.400		7.000
66/08/29		COMP			
66/09/06			0.400		7.300
66/09/26		COMP			
66/10/03			0.400		6.000
66/10/24		COMP			
66/10/31			0.350		5.000
66/11/28		COMP			
66/12/05			0.250		5.000
66/12/27		COMP			
67/01/03			0.400		6.700
67/01/23		COMP			
67/01/30			0.340		7.100
67/02/20		COMP			
67/02/27			0.360		7.000
67/03/27		COMP			
67/04/03			0.290		7.200
67/04/24		COMP			
67/05/01			0.300		6.400
67/05/22		COMP			
67/05/29			0.310		6.500
67/06/26		COMP			
67/07/03			0.300		6.600
67/07/24		COMP			
67/07/31			0.270		6.900
67/08/28		COMP			
67/09/05			0.290		7.100
67/09/25		COMP			
67/10/02			0.260		7.300
67/10/24		COMP			
67/10/30			0.260		6.800
67/11/27		COMP			
67/12/04			0.350		7.100
67/12/26		COMP			
68/01/02			0.250		7.000
68/01/29		COMP			
68/02/05			0.230		7.800
68/03/18		COMP			

310000
36 00 40.0 114 44 40.0
COLORADO RIVER NR BOULDER CITY
32 30NEVADA
COLORADO RIVER
LOWER MAIN STEM
1118C030 77777777
2 0000 FEET DEPTH

DATE FROM TO	TIME OF DAY	DEPTH FEET	09503 RA-226 DISOLVED PC/L	09504 RA-226-D ERROR PC/L	22703 U-NAT DISOLVED UG/L
68/03/04			0.230		6.800
68/03/25		COMP			
68/04/01			0.250		7.200
68/04/22		COMP			
68/04/29			0.190		6.500
68/05/27		COMP			
68/06/03			0.200	0.020	7.100
68/06/24		COMP			
68/07/01			0.230	0.020	6.100
68/07/29		COMP			
68/08/05			0.260	0.020	5.500
68/08/26		COMP			
68/09/03			0.250	0.020	7.500
68/09/22		COMP			
68/09/30			0.170	0.020	8.600
68/10/28		COMP			
68/11/04			0.200	0.020	8.900
68/11/25		COMP			
68/12/02			0.210	0.020	8.300
68/12/23		COMP			
68/12/30			0.180	0.020	8.500
69/01/27		COMP			
69/02/03			0.180	0.020	7.600
69/02/24		COMP			
69/03/03			0.230	0.020	7.400
69/03/24		COMP			
69/04/01			0.180	0.020	7.600
69/04/28		COMP			
69/05/05			0.190	0.020	8.100
69/05/26		COMP			
69/06/02			0.220	0.020	6.400
69/06/23		COMP			
69/06/30			0.200	0.020	6.500
69/07/28		COMP			
69/08/04			0.290	0.030	6.400
69/08/25		COMP			
69/09/16			0.170	0.020	10.000
69/10/23			0.190	0.020	8.100
69/11/17			0.140	0.020	7.400

TABLE A-26 (Cont.)

(RMN-32)

310000
36 00 40.0 114 44 40.0
COLORADO RIVER NR BOULDER CITY
32 30NEVADA
COLORADO RIVER
LOWER MAIN STEM
1118C030 77777777
2 0000 FEET DEPTH

DATE FROM TO	TIME OF DAY	DEPTH FEET	09503 RA-226 DISOLVED PC/L	09504 RA-226-D ERROR PC/L	22703 U-NAT DISOLVED UG/L
69/12/08			0.140	0.020	8.200
70/01/20			0.170	0.020	7.800
70/02/16			0.190	0.020	7.400
70/03/16			0.160	0.020	6.500
70/04/21			0.150	0.020	6.400
70/05/01			0.180	0.020	6.800
70/06/16			0.170	0.030	7.600
70/07/21			0.130	0.020	7.600
70/10/19			0.160	0.020	5.600
71/01/12			0.150	0.020	6.900
71/04/19			0.170	0.020	8.400
71/07/20			0.340		4.100
71/10/13			0.100		7.500
72/01/18			0.100		5.900
72/04/18			0.100		6.900

STATION DESCRIPTION

(RMN-33)

050501
34 19 00.0 114 09 00.0
COLO R MWD INTAKE NR PARKER DAM
06 CALIFORNIA
COLORADO RIVER BASIN
LOWER COLORADO SUB BASIN
1118C030 2111204
2 0000 FEET DEPTH

RIVER SYSTEM
INDEX 1101001
MILES 0200.60

II III IV V VI VII VIII IX X XI XII

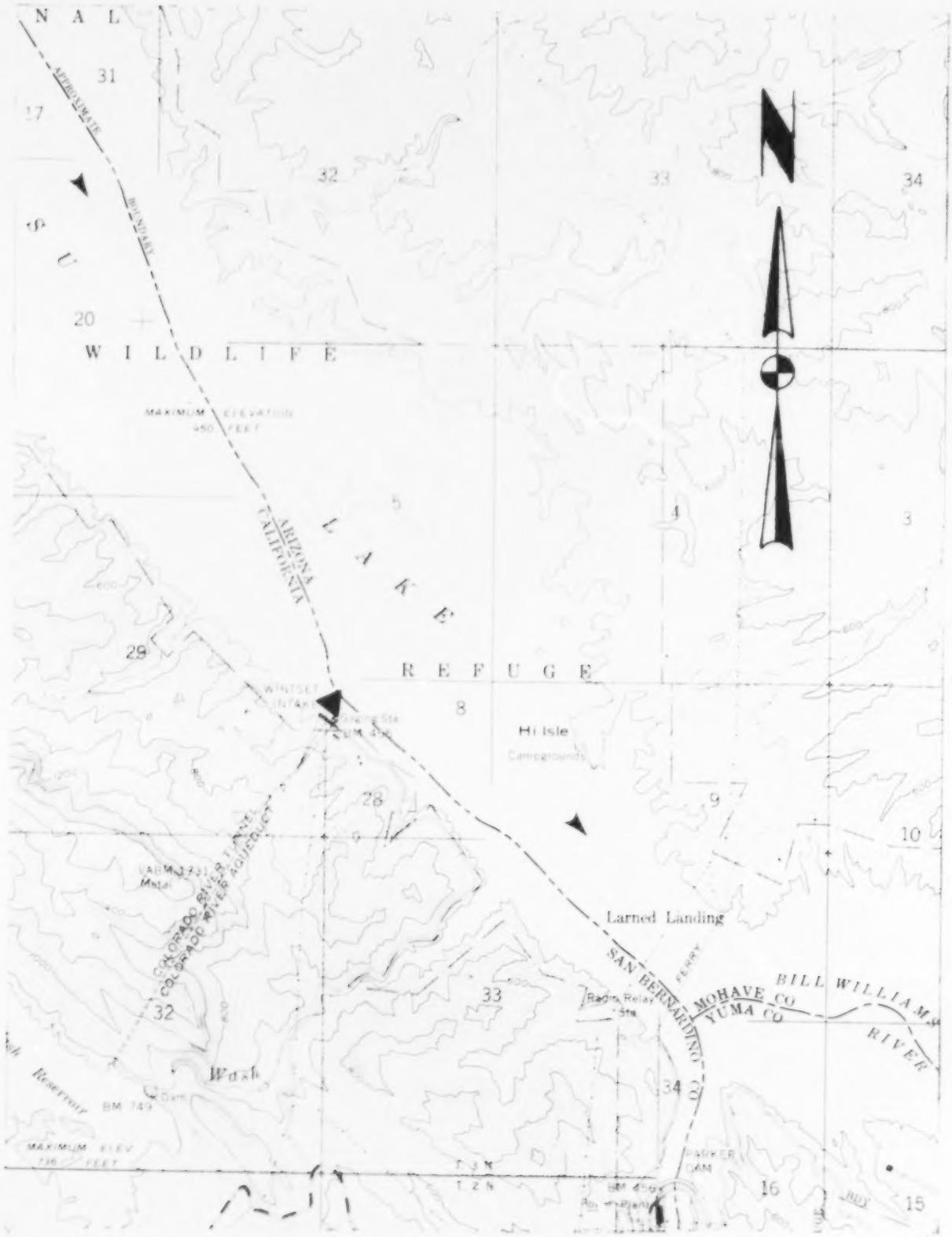
DESCRIPTION

CRRP NO. LMS-44, RMN-33
NW1/4, SW1/4, SEC 28, T3N, R27E

SAMPLED 2 MILES UPSTREAM OF PARKER DAM AT WHITSET INTAKE ON THE WEST BANK
TYPE DATA-SAL, PEST, RAD
TYPE FLOW MEAS-WTR STG REC AT 09427500 LAKE HAVASU, ARIZ-CALIF.
SAMPLING STARTED 1/7/63 AND ENDED 10/1/68
REMARKS: MWD=METROPOLITAN WATER DISTRICT

Number of Samples assayed for Ra-226 through period of record (1961-1972): 70
Mean Ra-226 concentration for period of record and 2σ deviation : 0.34 ± 0.10

Number of Samples assayed for U(total) through period of record (1962-1972): 70
Mean U(total) concentration for period of record and 2σ deviation : 7.79 ± 2.43



STATION LOCATION

(RMN-33)

TABLE A-27

(RMN-33)

050501
34 19 00.0 114 09 00.0
COLO R MWD INTAKE NR PARKER DAM
06 CALIFORNIA
COLORADO RIVER BASIN
LOWER COLORADO SUB BASIN
1118C030 2111204
2 0000 FEET DEPTH

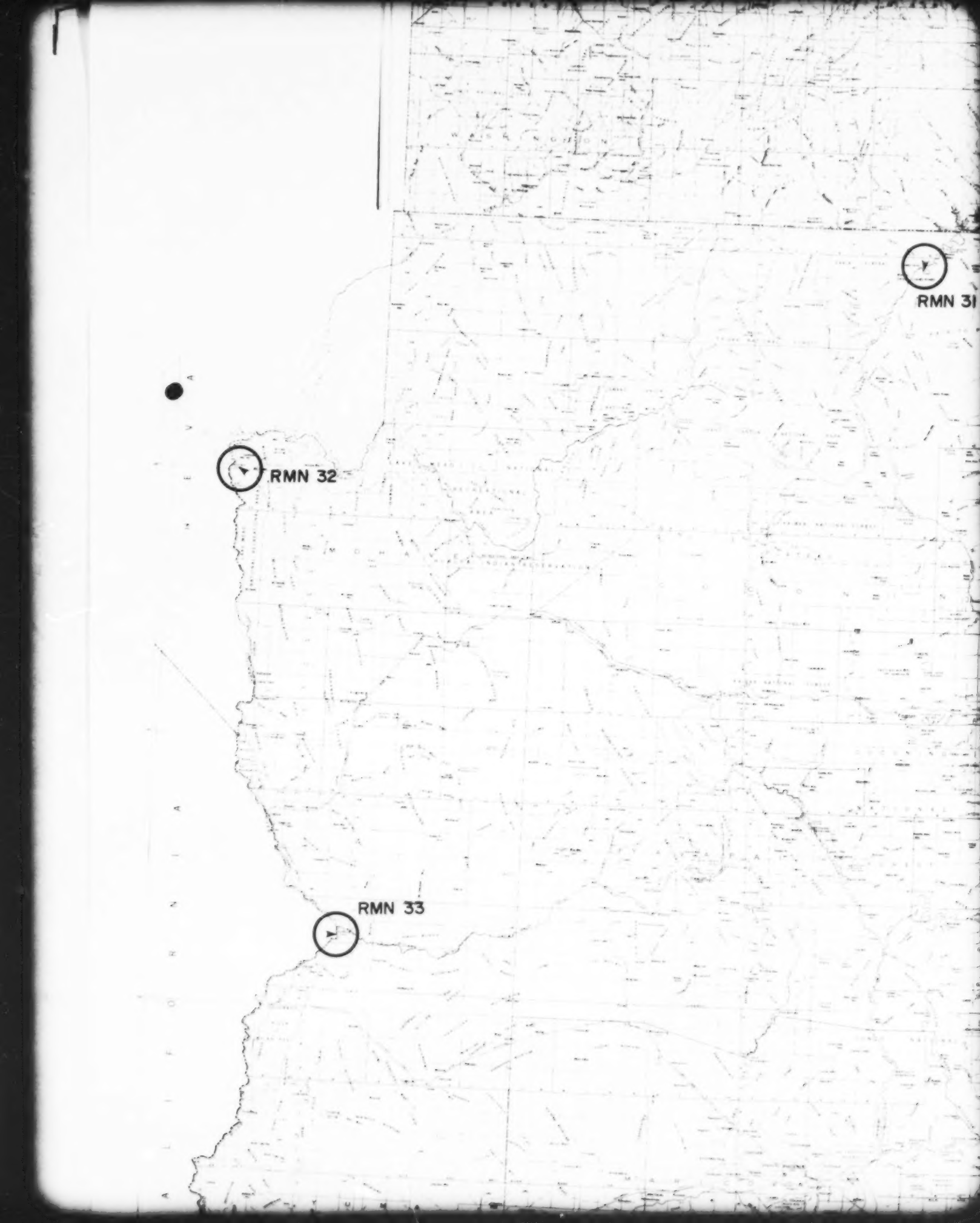
DATE FROM TO	TIME OF DAY	DEPTH FEET	09503 RA-226 DISOLVED PC/L	09504 RA-226-D ERROR PC/L	22703 U-NAT DISOLVED UG/L
63/01/07			0.260		9.900
63/02/01		COMP			
63/02/04			0.400		11.000
63/02/20		COMP			
63/03/03			0.380		11.000
63/03/28		COMP			
63/04/01			0.380		9.900
63/04/26		COMP			
63/04/29			0.360		8.100
63/05/24		COMP			
63/06/03			0.360		8.200
63/06/29		COMP			
63/07/01			0.340		8.800
63/08/01		COMP			
63/08/05			0.340		6.600
63/08/30		COMP			
63/09/02			0.310		7.200
63/09/27		COMP			
63/10/01			0.340		6.200
63/10/30		COMP			
63/11/04			0.360		5.900
63/11/29		COMP			
63/12/02			0.390		7.400
63/12/27		COMP			
64/01/03			0.330		7.700
64/01/31		COMP			
64/02/02			0.310		8.700
64/02/29		COMP			
64/03/02			0.340		7.900
64/03/27		COMP			
64/03/29			0.350		8.100
64/05/02		COMP			
64/05/05			0.320		8.800
64/05/29		COMP			
64/05/31			0.280		7.200
64/06/25		COMP			
64/06/28			0.380		7.900
64/07/31		COMP			
64/08/04			0.350		8.100
64/08/25		COMP			
64/09/30			0.400		9.400
64/10/02		COMP			
64/10/05			0.380		8.600
64/10/28		COMP			
64/11/01			0.370		8.900
64/11/27		COMP			
64/12/02			0.370		8.500
64/12/28		COMP			
65/01/04			0.320		9.200
65/01/29		COMP			
65/02/01			0.320		8.400
65/02/26		COMP			
65/03/03			0.290		10.000
65/03/29		COMP			
65/04/05			0.330		9.100
65/04/30		COMP			
65/05/03			0.370		8.400
65/05/28		COMP			
65/06/02			0.350		8.000
65/06/28		COMP			
65/07/01			0.370		11.000
65/07/31		COMP			
65/08/11			0.300		5.700
65/08/31		COMP			
65/09/01			0.400		6.900
65/09/30		COMP			
65/10/01			0.380		6.700
65/10/31		COMP			
65/11/01			0.380		8.400
65/11/30		COMP			
65/12/01			0.390		7.800
65/12/31		COMP			
66/01/01			0.290		7.500
66/01/31		COMP			
66/02/02			0.430		7.500
66/02/21		COMP			
66/02/26			0.400		7.800
66/03/28		COMP			
66/04/04			0.380		7.600
66/04/25		COMP			

TABLE A-27 (Cont.)

(RMN-33)

050501
34 19 00.0 114 09 00.0
COLO R MWD INTAKE NR PARKER DAM
06 CALIFORNIA
COLORADO RIVER BASIN
LOWER COLORADO SUB BASIN
1118C030 2111204
2 0000 FEET DEPTH

DATE FROM TO	TIME OF DAY	DEPTH FEET	09503 RA-226 DISOLVED PC/L	09504 RA-226-D ERROR PC/L	22703 U-NAT DISOLVED UG/L
66/05/02			0.400		7.700
66/05/23		COMP			
66/05/30			0.400		7.100
66/06/27		COMP			
66/07/04			0.430		8.000
66/07/25		COMP			
66/08/01			0.390		8.100
66/08/29		COMP			
66/09/05			0.380		6.800
66/09/26		COMP			
66/10/03			0.390		6.600
66/10/17		COMP			
66/11/07			0.330		5.400
66/11/29		COMP			
66/12/05			0.350		7.600
66/12/19		COMP			
67/01/16			0.280		7.500
67/02/06			0.390		7.200
67/02/27		COMP			
67/03/06			0.370		8.000
67/03/27		COMP			
67/04/03			0.330		8.300
67/04/24		COMP			
67/05/01			0.330		7.300
67/05/22		COMP			
67/05/29			0.340		7.400
67/06/26		COMP			
67/07/03			0.360		6.200
67/07/24		COMP			
67/08/01			0.310		7.100
67/08/28		COMP			
67/09/04			0.320		6.900
67/09/25		COMP			
67/10/02	10 00				
CP(T)-04			0.310	0.030	6.800
67/10/23	10 00				
67/10/30	10 00				
CP(T)-04			0.300	0.030	7.400
67/11/27	10 00				
67/12/11	10 00				
CP(T)-02			0.270	0.030	7.100
67/12/25	10 00				
68/01/01	10 00				
CP(T)-04			0.270	0.030	7.300
68/01/29	10 00				
68/02/10	10 00				
CP(T)-02			0.270	0.030	7.600
68/02/26	10 00				
68/03/01	10 00				
CP(T)-05			0.270	0.030	6.600
68/03/31	10 00				
68/04/01	10 00				
CP(T)-04			0.250	0.030	7.000
68/04/30	10 00				
68/05/01	10 00				
CP(T)-05			0.250	0.030	7.200
68/05/31	10 00				
68/06/01	10 00				
CP(T)-04			0.180	0.020	7.400
68/06/30	10 00				
68/07/01	10 00				
CP(T)-04			0.250	0.030	5.700
68/07/31	10 00				
68/08/01	10 00				
CP(T)-04			0.240	0.010	5.800
68/08/31	10 00				
68/09/01			0.300	0.030	7.200
68/10/31			0.240	0.020	9.300
68/10/01		COMP			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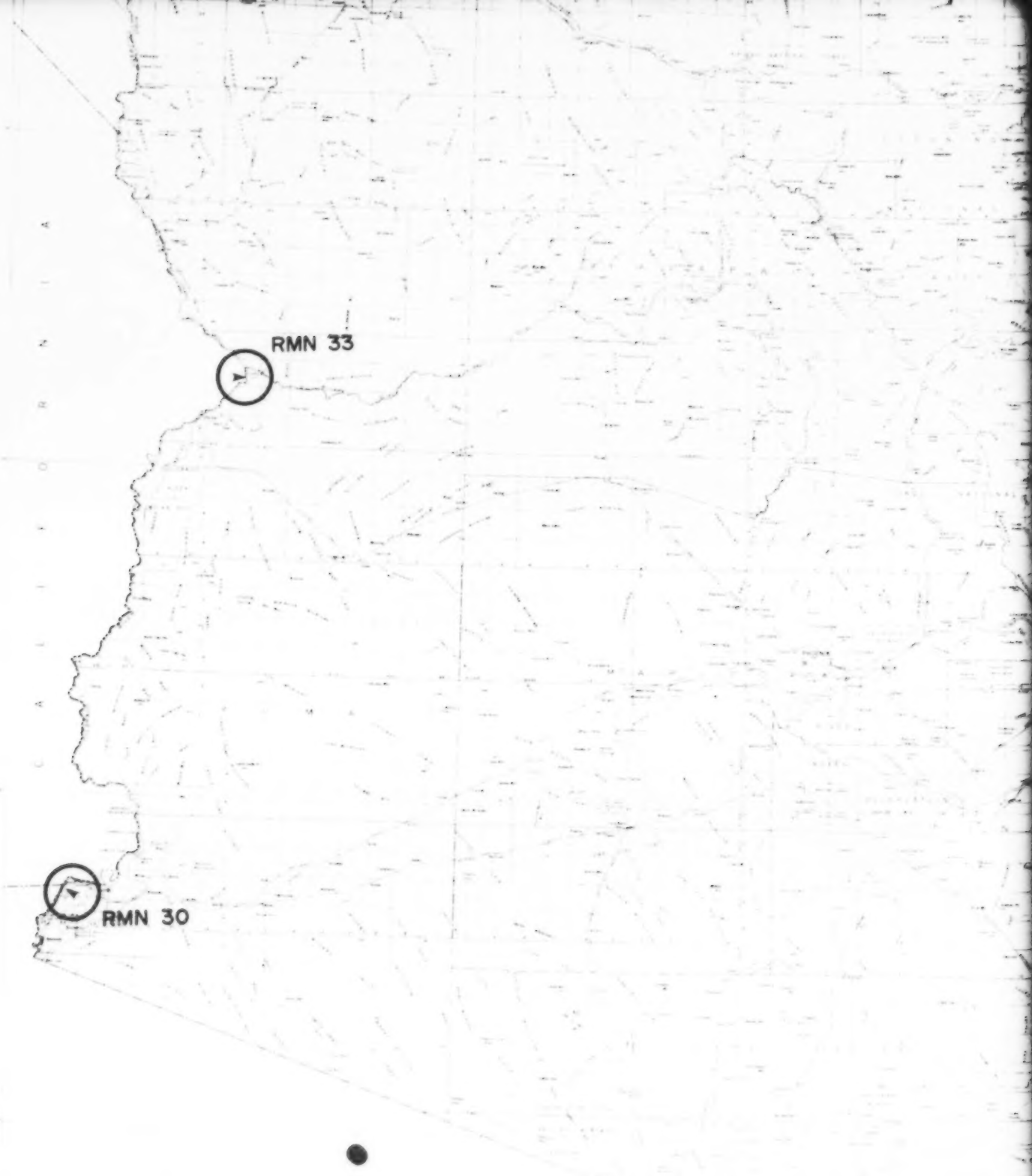
RMN 32
RMN 33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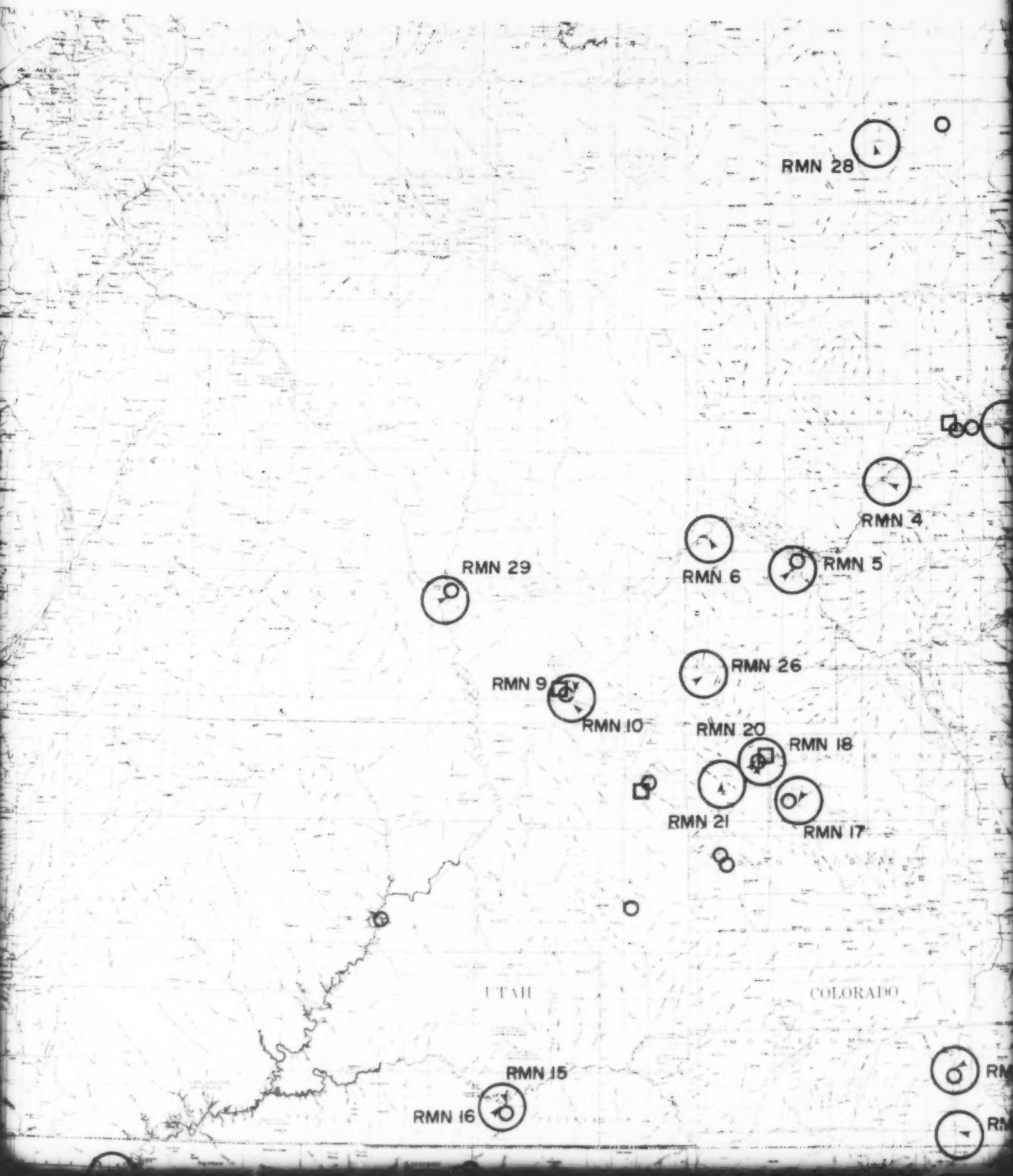
RMN 30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RMN 18
RMN 21
RMN 17
RMN 15
RMN 16
UTAH
COLORADO

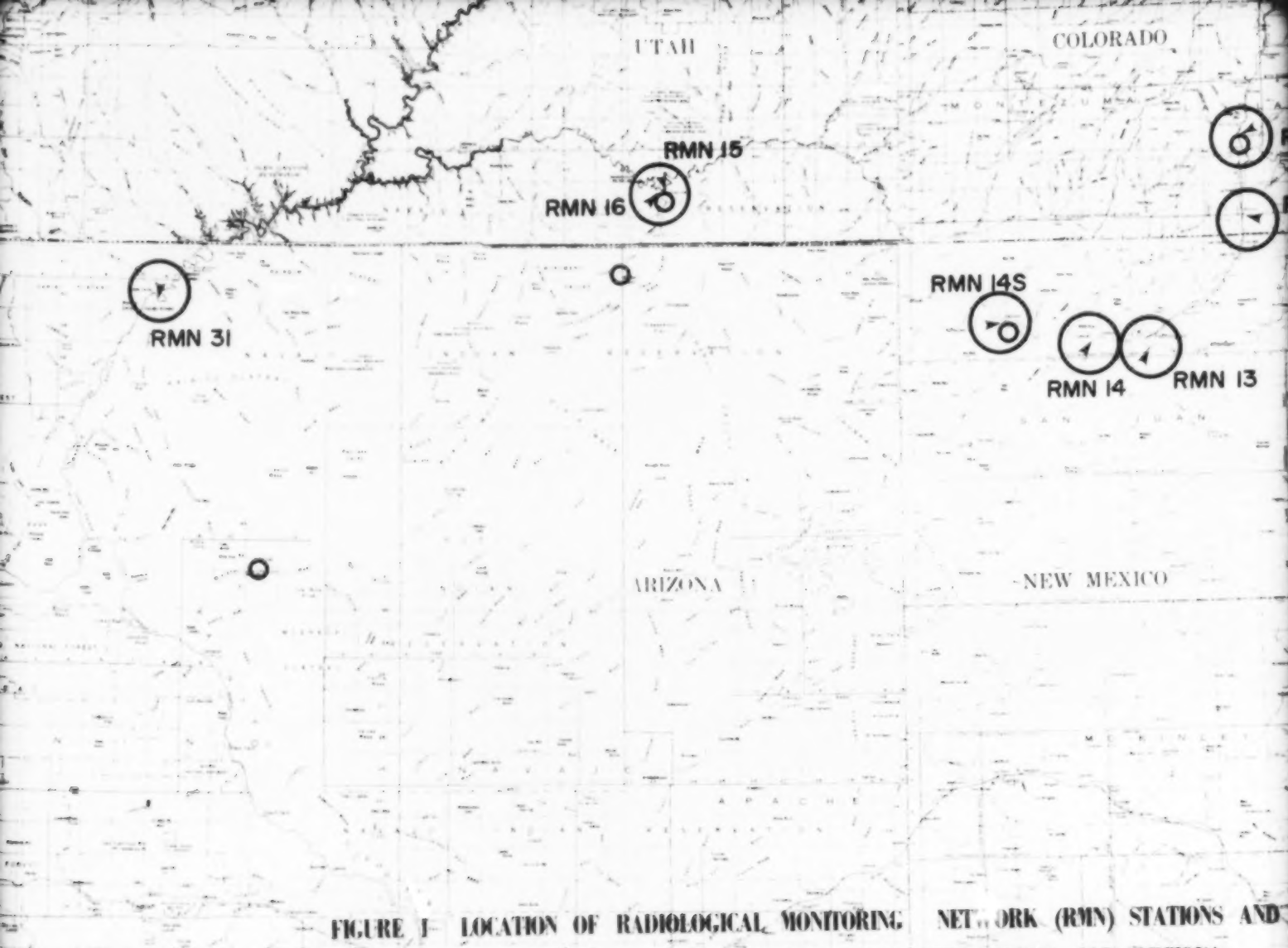


FIGURE 1 LOCATION OF RADIOLOGICAL MONITORING NETWORK (RMN) STATIONS AND COLORADO, UTAH, NEW MEXICO, AND ARIZONA.

EXPLANATION

RMN 6 — Radiological (Radium) Monitoring Network ("RMN") station location and station number

Location of abandoned uranium mill and tailings piles

Location of active uranium mill and tailings piles

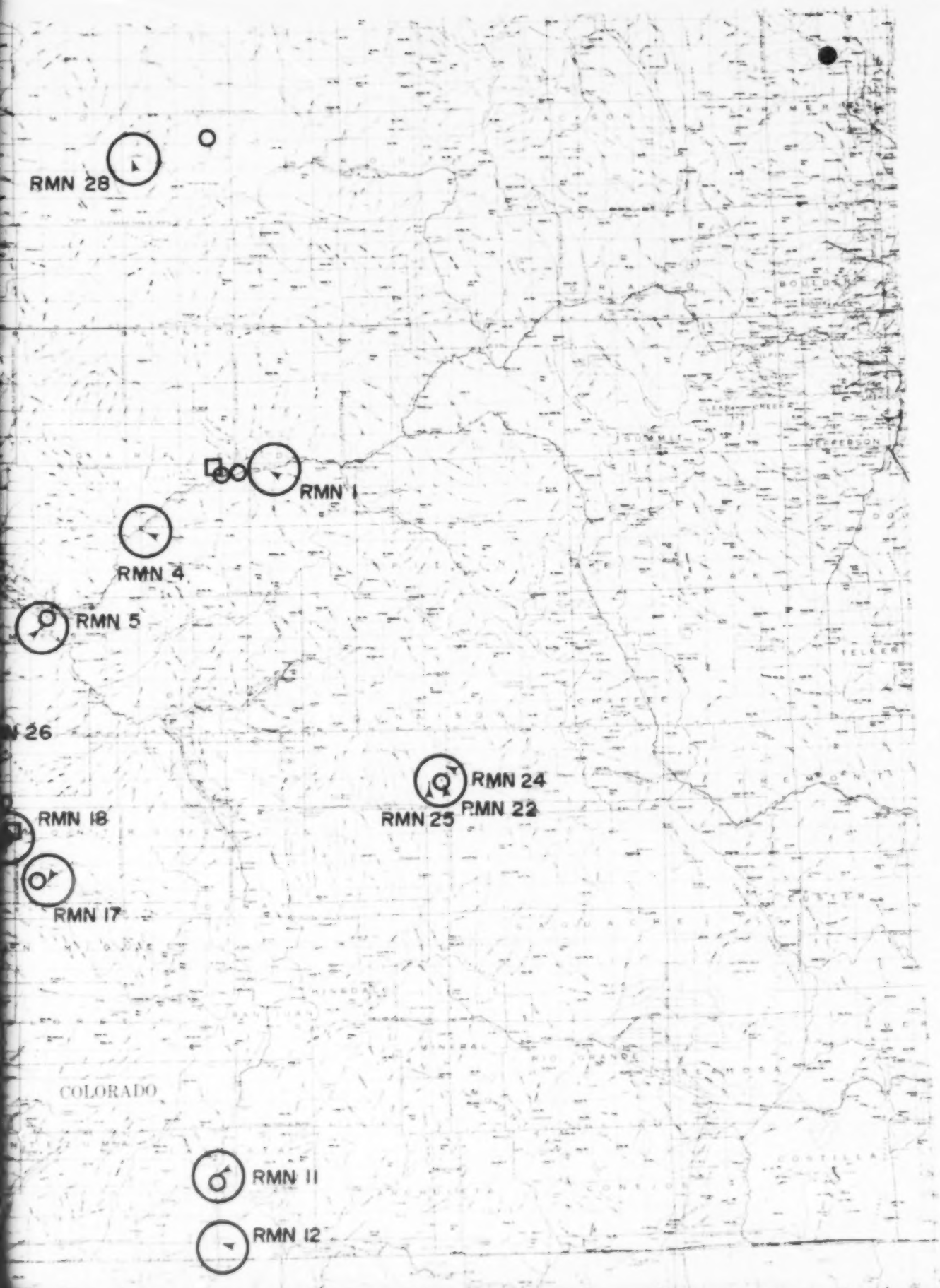
FIGURE 1 LOCATION OF RADIOLOGICAL MONITORING NETWORK (RMN) STATIONS A
COLORADO, UTAH, NEW MEXICO, AND ARIZONA.

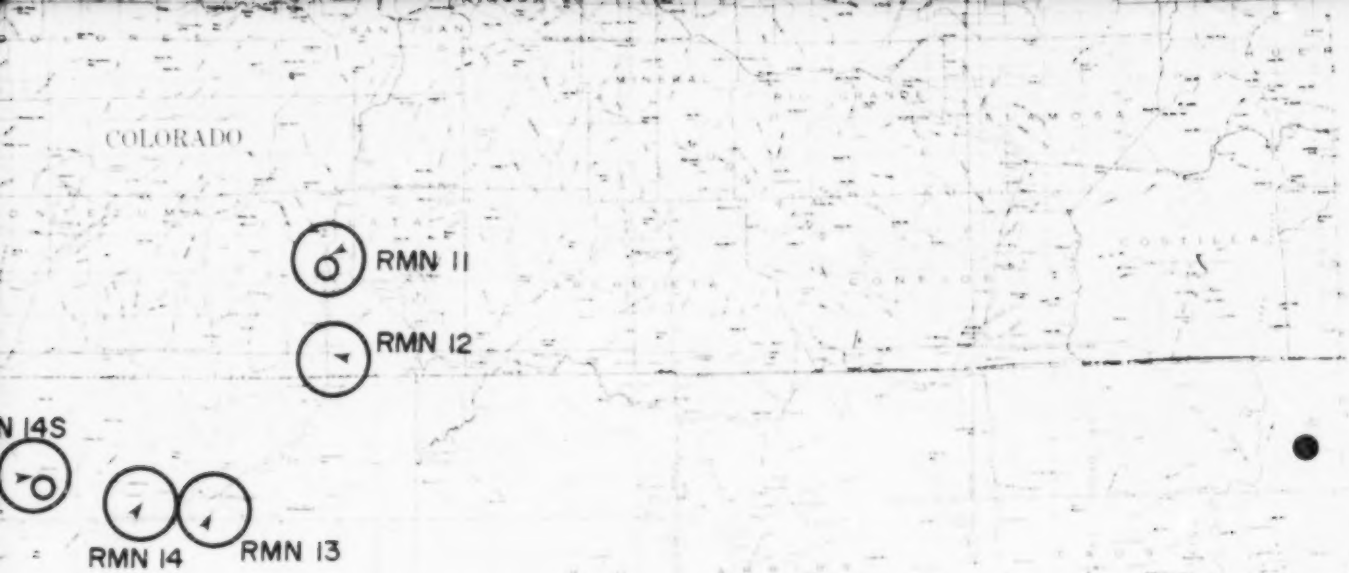
EXPLANATION

RMN 6
Radiological (Radium) Monitoring Network ("RMN") station lo
station number

Location of abandoned uranium mill and tailings piles

Location of active uranium mill and tailings piles


RMN 28
RMN 1
RMN 4
RMN 5
26
RMN 24
RMN 25
RMN 22
RMN 18
RMN 17
COLORADO
RMN 11
RMN 12



ORK (RMN) STATIONS AND URANIUM TAILINGS PILES –
MEXICO, AND ARIZONA.

TION

letwork ("RMN") station location (arrow) and

mill and tailings piles

and tailings piles

K (RMN) STATIONS AND URANIUM TAILINGS PILES –
OO. AND ARIZONA.

N

ork ("RMN") station location (arrow) and

and tailings piles

tailings piles